The American Journal of Pharmaceutical .... Education ....

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THE OFFICIAL PUBLICATION OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

"In the fields of medicine, dentistry, law, and engineering, we find that very substantial financial aid is being given to train their future teachers and research workers. We in the drug industry must do the same."—Edwin L. Newcomb.

Volume XIII October, 1949 Number 4

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THE AMERICAN JOURNAL

OF

PHARMACEUTICAL EDUCATION

Volume XIII **July, 1949** **Number 3**

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Published quarterly by the American Association of Colleges of Pharmacy at Lincoln 8, Nebraska. (Jacob North & Co.) Subscriptin price $4.00. Single copies $1.00. Entered as second class matter July 1, 1937, at the postoffice at Lincoln 8, Nebraska, under the Act of August 24, 1912.

Editorial Office: College of Pharmacy, University of Arizona, Tucson, Arizona. Address all communications to the Editor.

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A Method for the Selection of Students Applying for Admission to Colleges of Pharmacy*

EARL R. SERLES
University of Illinois, College of Pharmacy

The adoption of any procedure which deviates from the traditional evaluation of grades which represent graduation from high school, or successful completion of college work, as a criterion for admission to an institution of higher learning, predicates the consideration of several factors. These factors may be classified into two categories:

A. 1. Those which emanate from the policy governing the operation of the school or college, such as state laws which prescribe definite minimum standards controlling admission of students to state-supported institutions.
2. The policy of boards of trustees operating private institutions.
3. The legal requirements for licensure, as defined in the several State Pharmacy Practice Acts.

B. 1. The utilization of grade vlaues which are supplemented by a series of tests, for which reasonable norms have been established, and to which properly adjusted weighted scores are assigned. The addition of the tests furnishes a common denominator, which tends to adjust the wide variance of grade evaluations established by the various teachers within a high school, and between different high school systems.
2. The evaluation of personal traits of character, through the medium of systematic personal interviews, can assist materially in the analysis of those qualities necessary to insure success in the future application of the college training.
3. The utilization of classified personal reference information secured from teachers, employers, or other distinguished persons, is, perhaps, of greatest value when used to interpret the qualities of personal integrity.

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* Presented before the Second Session at the Jacksonville 1949 meeting.
Statistics Supplied by: Prof. J. E. Davis, Chairman Committee on Administration and Correlation of Aptitude Tests, University of Illinois, College of Pharmacy.

4. **The physical fitness of the applicant is likewise a factor which should not be overlooked; wherever possible this should be established through the medium of a thorough physical examination.**
5. **If desired, one may also include such factors as age, experience in related fields of endeavor, advanced educational training, military service, relationship to persons of professional training, and direct descendants of alumni.**

I shall now endeavor to present to you an interpretation of the testing program which has been employed in the University of Illinois as a means of selecting the students eligible to enroll in our freshman class since 1945. In the years preceding 1945, two different methods of selection were employed. Up to and including 1941, students were admitted to the College of Pharmacy upon the successful completion of one year of prescribed college work, without consideration of grade differential. From 1942 to 1945, admission was limited to high school students ranking in the upper fifty percentile of their respective graduating classes. In both of these instances, approximately 40 per cent of the students failed to complete the first year of their course requirements successfully.

In 1945 the Board of Trustees of the University authorized the establishment of a Committee on Admissions for the College of Pharmacy, consisting of the Registrar, the Dean of the College, and the staff members representing the major fields of study comprising the curriculum. The Committee was empowered to establish a testing program, which was calculated to supplement the evaluation of the transcripts of high school and college records submitted by the applicant. The items included in the program then established and still employed are:

A. **Application blank.**
B. **Uniform high school transcript blank.**
C. **College transcripts.**
D. **Confidential teachers' recommendation blanks—(sent to high school English, Mathematics, and Science teachers).**
E. **Employer's recommendation blank—(required only if student indicates on application that he has had experience as Apprentice).**

F. Medical certificate.
G. Personal interview score sheet—(each student is interviewed by three staff members of the College of Pharmacy).
H. Battery of tests:
   1. A.C.E. Psychological Test.
   2. Cooperative English Test—Comprehensive Reading.
   3. Pharmacy Test—(a. Speed & accuracy — b. Pharmacy apprenticeship evaluation).

The values assigned to each of the functions originating with the items listed above are as follows:

FINAL APTITUDE SCORE

Name of Applicant George Williams (G. I.)		
High School Grade Point Average:		2.97 × 50 = 148
A. C. E. Test Score: (Percentile)		82 = 82
English Test Score: (Percentile)		67 = 67
Pharmacy Aptitude Tests:		
a. Speed & Accuracy	40	
b. Knowledge	36	† 76 ÷ 4 = 19
Teachers' Rating Score (av. of 3)		60 ÷ 20 = 3
Employer's Rating Score:		45 ÷ 15 = 3
Personal Interview Score:		
a. Interview #1	140	
b. Interview #2	160	145 (60%) = 87
c. Interview #3	135	
		409
Veterans Preference (10%):		41
Final Score:		450

In order for such a program to be effective, it requires meticulous care in the organization of each phase of the program. It is desirable to select one person who will be responsible for all correspondence necessary for the scheduling of the tests and personal interviews. It is also important to secure a person experienced in aptitude testing to administer the tests.

† 1 point given for each correct answer in each of 2 Pharmacy Aptitude Tests—Number of questions asked on each:
Speed & Accuracy—50, Knowledge—45.

Perhaps the most difficult procedure centers around the problem of developing the proper technique for interviews. In this connection, permit me to say that there is no substitute for the knowledge gained through experience. If interview teams are employed, it is desirable to establish classes of instruction for interviewers. In our own institution we invited persons of long experience in this type of work to discuss techniques which might be employed, as well as to point out fallacies which may arise from improperly conducted interviews. You will note that in the evaluation of the various factors which are considered by our Committee on Admissions, the Personal Interview has been assigned a rather heavy rating value.

It is our opinion that the results obtained have definitely justified the effort. We recognize that our program has not been established sufficiently long to permit positive conclusions.

The charts here presented indicate trends only.*

In these charts we have endeavored to show—

1. **Relationship of standing on the admissions program to the student's satisfactory progress in College.**
2. **A comparison of learning ability with—**
   a. **National norms.**
   b. **Results of Pharmaceutical Survey.**
   c. **Development under our admissions program.**

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* **Charts for Entering Classes of 1945 and 1946 show class standing at end of the first quarter of the Junior year.**
Charts for Entering Classes of 1947 and 1948 show present standing.
Charts were lantern projected.

COMPARISON OF STANDINGS ON AMERICAN COUNCIL ON EDUCATION PSYCHOLOGICAL TEST (COLLEGE EDITION) FOR VARIOUS GROUPS, BY QUARTILES.

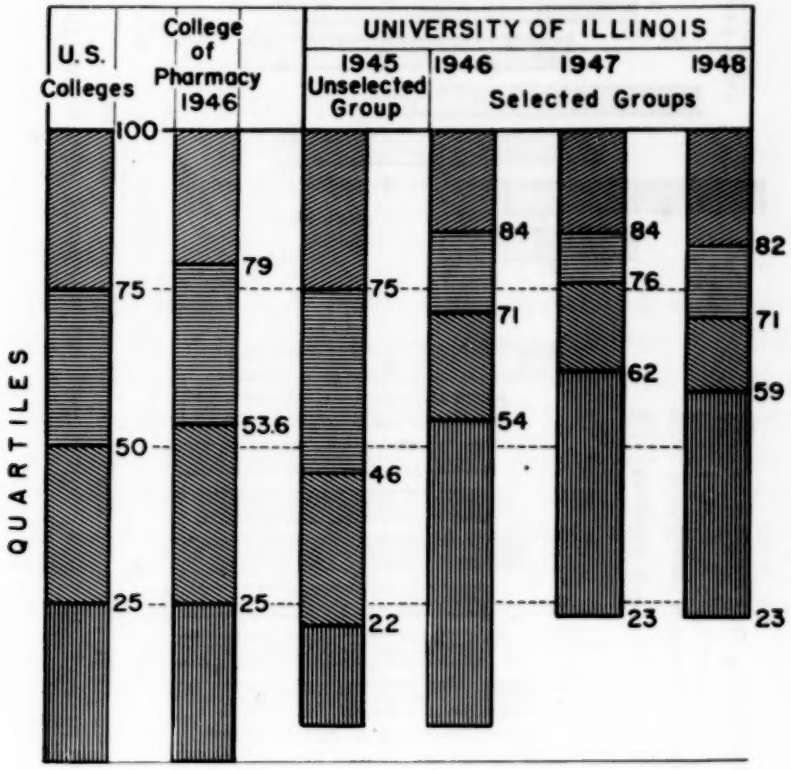

Chart A:

Each shaded space corresponds to one-quarter of the students tested. The numerals appearing at the right of each quartile column correspond to the percentile of national norms for such scores.

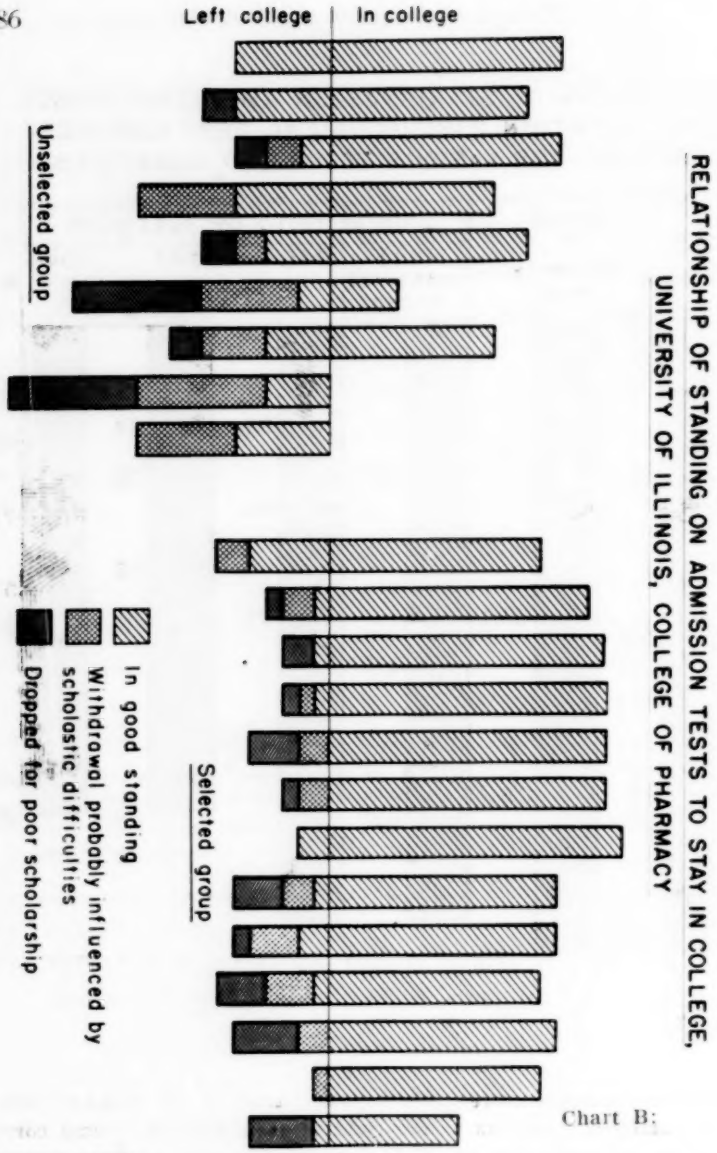

Chart B:

RELATIONSHIP OF STANDING ON ADMISSION TESTS TO STAY IN COLLEGE, UNIVERSITY OF ILLINOIS, COLLEGE OF PHARMACY

Unselected Group:
Each bar, except the bar at the right, represents ten students admitted in September, 1945.

Selected Group:
Each bar, except the bar at the right, represents twenty students admitted in September, 1946, and September 1947.

In each group the students represented by the bars above the center line were in good standing at the beginning of their junior year. The students represented by the bars below the center line have withdrawn from college, as indicated by the legends shown on the chart.

Teaching the General Course in Pharmacognosy According to a Physiological Pattern*

H. W. YOUNGKEN, JR., and A. C. NEVA
University of Washington

The organization of subject matter dealing with as broad a scope of biological, chemical, and physical principles and their applications to drugs as that which is presented in the beginning course in pharmacognosy requires careful study of the several objectives intended by the course and of those sought by the student. It has been well expressed[1] that the instruction in this field might serve most efficiently if it aims first to select only that which is most useful from the vast body of biological and chemical knowledge available and, secondly, if it takes into consideration the type of teaching and learning which enables students to understand facts and principles instead of merely committing them to memory.

A universal agreement in the specific methods by which this can best be accomplished is not altogether desirable. In fact to establish fixed outlines for the presentation of subject matter in pharmacognosy would tend to stereotype the field, provide for less initiative on the part of instructors, and possibly create machinery which might hamper current needs for newer teaching. On the other hand it is well agreed that whatever may be the con-

*Read before the Conference of Teachers of the Biological Sciences at the 1949 meeting at Jacksonville.

venient method for presenting a subject it should excite a close association of what is learned with that which may be a part of the student's thinking in the future. Thus in discussing the presentation of subject matter in pharmacognosy according to a physiological pattern as proposed here one should bear in mind, first, that this pattern is selected for convenience and, secondly, that major groupings can be selected so as to lend themselves for an association of products of plant and animal cells with how they are formed and for what each is used. If emphasis is placed upon how a living organism produces a useful substance, principles of physiology and physiological chemistry obviously play an important role in the presentation. The principles of phylogeny for so many years have played the major role in the association of genera, families, orders, and kingdoms with useful drug products representative of these entities.[2, 3] Plant physiology (inorganic and organic plant nutritional problems, for example) furnishes a major portion of the background relative to the field of plant constituents. Animal physiology (mechanisms of enzymes hormones, proteins, etc.) plays an equal role in the field of animal products. In fact so important are these basic concepts of physiology that there is hardly a field of scientific pursuit that does not drain upon them or make use of them as fundamental in applied teaching and research principles. This would be the first direction for the thinking of the pharmacognosy teacher. A large portion of the didactic and laboratory material of the course would pivot about constituents and the theme of their biosynthesis. Subject matter could be organized into three major parts. The first portion of the course (Part I) would be organized under an introduction. This would include the scope of pharmacognosy as a science, the relationship of this science to allied fields, for example, pharmacology, chemistry, biology, agricultural sciences, microbiology, etc., and the historical development of plant and animal substances used for medicines by man. Drug nomenclature, especially that pertaining to official monographs of the U.S.P. and N.F., should be carefully defined. Among additional introductory material that the student should find significant is the nature of reference literature made available and the methods for its use during his study. Following Part I, the introduction to the course, such subject

matter as the cellular protoplasmic and non-protoplasmic constituents now generally taught in pharmacognosy could be organized under the following headings:—

Part II. An Introduction to Cellular Constituents

a. The cell as a physiological-chemical unit
b. Type processes involved in biosynthesis
1. Photosynthesis, The Krebs Cycle, etc.
2. Protoplasmic and non-protoplasmic cell constituents

During the background courses of biology (botany and zoology) the student learns of cells as units in which certain inclusion bodies are present. In pharmacognosy he is taught that the cell is a functioning unit in which certain chemical processes are carried on. He recognizes it as a physiological-chemical unit. He learns to regard plant and animal cells as potentially important laboratories of drug synthesis in which inclusion bodies of many forms are produced, some of which have value as drugs. This learning is accomplished in part by the teacher's ability to instruct in the type chemical processes which take place in plants and animals. For instance, the subject of photosynthesis in plants should be well fixed in the student's mind from the point of view of its importance in aldehyde, organic acid, sugar, starch, and carbohydrate synthesis. Reference should be made as well to the role of organic and inorganic substances (microorganisms, calcium salts, nitrates, etc.) which influence carbohydrate production in plant cells in the absence of photosynthesis. Further, study of the Krebs Cycle, which is significant in carbohydrate, alkaloid and protein biosynthesis (for example, asparagine from oxalacetic acid and glutamine from glutaric acid, etc.) would be desirable. The discussion of such types of processes should be within the scope of the undergraduate mind. They serve a useful purpose in the emphasis of the importance of cells as synthetic entities. At the same time, care must be taken to select those which are well established by research.

With the discussion of type processes in biosynthesis, protoplasmic and cell secretion products of plants and animals could thus be introduced. Carbohydrates such as starch, sugars, dex-

trins, mucilages, gums, and other constituents, as for example, fats, waxes, oils, alkaloids, proteins, enzymes, hormones, vitamins, resins, etc., would be presented as type groups of important cellular principles. The general properties of these would be discussed with emphasis upon their method and site of formation in the organism.

At this point, name individual members of each of the above groups so that the student may recognize examples. Following this introduction he is then made ready for a discussion of cellular products as drugs. This phase of the study follows in Part III of the organization.

Part III. Cellular Constituents as Drug Substances

Assuming that the pharmacognosist has surveyed well the nature of how plant and animal cells participate in the synthesis of cellular products he is now ready to present certain of these products as constituting useful drugs. To this end he should be aware of the student's desire to associate the nature of the biosynthesis of drugs with that purpose for which each may be used. With this in mind the student seeks; 1) to learn in what fashion the genesis of the substance *affects* the living organism that produced it; and 2) how it *affects* other living organisms, including man.

It would seem then that an association of physiological concepts relative to the purpose for which a cellular product is used should be an important direction for the teacher's thinking. Among several of such concepts are those pertaining to where an agent exerts its most useful action, its therapeutic applications, its nontherapeutic applications, mechanisms by which it acts on plants or animals, etc. Obviously the pharmacologist is concerned with the teaching of experimental methods and their principles which cover most of these associations affecting animals.[4, 5] Progressive pharmacologists do this in such a way that the subject is more than pharmacodynamic or the stereotyped materia medica of the past.

No subject such as the undergraduate course in general pharmacognosy can be broad enough in scope to deal with all of the above manifestations of drug usage. Were it to attempt to do so it might degenerate into a stereotype course in materia medica and therapeutics. However, for *convenience* and for tying in certain aspects of the primary uses of cellular products these substances as drugs might well be arranged under certain physiological groupings which would aid in directing the student toward their uses. It is desirable that drug entities be a large part of the teaching. At the same time emphasis should be maintained whereever possible; first, upon the biosynthetic factors which contributed to the product's formation; and secondly, upon certain relationships that constituents have physiologically in common.

With the third major portion of the course devoted to constituents as drugs there might be four major groupings then, each with several subdivisions, under which such products could be discussed. These would be as follows:

Part III. Cellular Constituents as Drug Substances

a. Those directly affecting the skin and mucous membranes
b. Those directly affecting the gastro-intestinal tract
c. Those systemically affecting tissue systems
d. Those employed as specifics

Part III. a. Those directly affecting the skin and mucous membranes:

Under such a heading those cellular products classed as protectives, astringents, irritants, and antiseptics would be assembled. Among cellular products to be grouped under the category of protectives are the plant carbohydrates, gums, mucilages, and pectins; also plant and animal fats and fixed oils, such as are currently used as protectives. The plant starches, spores, and root drugs occasionally used as dusting powders might likewise be included under this first sub-group, "protectives". The purpose of the subgroup would be to select currently useful products from plant and animal cell functions which possess constituents generally employed as emollients, demulcents, and dusting powders, and ar-

range these constituents together on a broad chemical basis. A minimum of emphasis would be placed upon crude drug descriptions. As part of the descriptive phase, point out individual chemical relationships and, as far as possible, site probable factors involved in the biogenesis of such constituents. For example, under the sub-group (protectives), mucilage of acacia, chondrus, and tragacanth would be linked together. The fixed oil drugs, olive, linseed, persic, almond, etc., have common glyceride entities within themselves, as do the fats, lard, and lanolin. It could be pointed out that mucilage, carbohydrates and the glyceride esters of fixed oils and fats are related in plant biosynthesis through phospho-glyceric acid production during carbohydrate synthesis.

Other plant products which could be conveniently grouped together as exerting an effect upon skin and mucous membranes would be certain drugs possessing astringent, irritant, or antiseptic activity. Obviously, again, the sub-groupings serve for linking together certain cell constituents present either in crude drugs or isolated as drug entities. For example, under the group of plant astringents as agents affecting the skin and mucous membranes, the student would learn of tannic acid and its formation in the pathological, gall-like excresences of oaks. This tannin would be associated chemically and physically with tannins of kino, gambir, and witch hazel.

As cell products exerting irritant effects there would be discussions of mustard, its volatile oil, arnica, capsicum, and the products of turpentine. Rubifacient and vessicant types of irritants should be explained with examples.

A sub-group, the antiseptics, would be included as a category under which certain plant constituents having this use in common are organized. Many plant principles exert antiseptic effects on the skin and mucous membranes. At this point, it might be advisable to organize the cellular constituents of such a discussion under the general chemical division of tars, balsams, resins, and volatile oils. For example, pine tar, juniper tar, and coal tar have constituents in common; as do peruvian balsam, benzoin, and

storax. The development of these substances within the various plant tissues, their modes of production, and chemical properties would be learned. Useful preparations should be presented to serve as examples of how they are employed. The teacher in pharmacognosy should point out, wherever possible, relationships between the nature of cell constituents and their physiological uses.

Part III. b. Those directly affecting the gastro-intestinal tract:

Under this grouping would be included certain currently used substances from plant and animal which have as their primary importance an effect upon various parts of the gastro-intestinal tract. They would be associated together for convenience under such sub-divisions as:

1. **Carminatives and flavors**
2. **Bitters**
3. **Enzymes and digestants**
4. **Evacuants**

Breaking down each of these sub-divisions and with preliminary discussions devoted to the meaning of terminology, the teacher would then proceed to select type examples so as to illustrate the nature of cellular products which lend themselves as examples of these physiological groups. For example, under "carminatives and flavors" there would be drug products selected from the members of the mint, citrus, and umbel families; also fruits, seeds, and barks which are important from this point of view. A type discussion, for example, as selected from the mint family (labiateae) is peppermint oil. The nature of volatile oil formation in plants has been discussed in general terms under Part II of the over all outline. Peppermint oil would now be discussed as to its specific formation in the plant, its distillation, its chemical constituents, and the relationship of these constituents to other terpenes, esters, and aldehydes of similar mints. Type preparations should be selected from the official groups and from pharmaceutical specialties to illustrate the manner of pharmaceutical application. The number of these should be kept to a minimum. Obviously in the course of such a presentation botanical characteristics of the plant, especially its leaves, including cultivation

and commercial factors, should be treated, but within such limitations as a well proportioned time budget will allow. Cellular products of the orange and lemon such as their oils would follow. The umbelliferous fruits, anise, fennel, caroway, etc., would come next; then fruits such as vanilla, cherry, pimenta; rhizome drugs such as ginger and licorice; and barks, such as cinnamon and sassafras. Emphasis would be stressed upon all of these plants as oil producers and the relationships in common that these oils possess as far as the plant physiology of their production and for what each does physiologically in the body. Oils and terpenes, herbs, fruits, seeds, barks, roots, and rhizomes which lend themselves as useful carminative and flavors might thus be well tied together under such a division.

Under the division of "Enzymes and Digestants" cellular products of animals, such as the enzymes, pepsin, rennin, and pancreatin, might similarly be treated. Enzyme synthesis in animals and plants will have been dealt with under Part II of the organization. At this point the student is now ready to learn type drug examples of such wherein the drug is associated with its physiological role in the gastro-intestinal tract. Papain, diastase and malt extract might illustrate type drug examples of plant enzymes. Here again the source should be dealt with as a synthesis medium with stress upon methods by which these enzymes are separated from cells and made ready for use. Evacuant drugs from natural sources include certain vegetable colloids, oils, anthracenes, and resins. Thus such a sub-division might be treated by the use of type products to fit each of these four entities. For example, under such a grouping of cellular products affecting the gastro-intestinal tract would be included the following: Agar, psyllium, gums ,and cereal brans as vegetable colloids and fibers; castor oil as a vegetable oil evacuant; cascara sagrada, senna, rhubarb, and aloe as anthracene types; and podophyllum, jalap, and colocynth as vegetable resin evacuants. To illustrate precisely the nature of a pharmacognostical presentation of any one of these let us select cascara. The discussion of this would serve chiefly as an example of the character of anthracenes as important physiological principles of plants. General characteristics of an-

thraquinone structures as entities including the similarities of chemical structures and where found in portions of plants would precede the discussion. Among additional background material the fact that these substances directly affect the large intestine should be mentioned. Then define the product Cascara, citing among other data of importance the need for aging the bark for a period of time before its use. At this point the growth of cascara trees, their macroscopic characteristic and method of debarking would be discussed. Reference should be made to the similarity of bark growth of *Rhamnus pushiana* to that of other *Rhamnus* and *Prunus* species such as buckthorn and wild cherry. Tie in the chemical constituents of each relative to their similarities and dissimilarities, and refer to principles such as irritants and enzymes that affect the processing of the drug for its use. The presence of tannins has some physiological importance in the use of the drug. The commercial aspects of bark production and contamination is important. Finish the discussion with examples of pharmaceutical preparations which represent convenient methods for employing cellular anthracenes in such a form comparing the extent of usage of these with other type anthracenes of a similar physiological importance.

Part III. c. Those systemically affecting tissue systems:

The third major grouping of cellular products constituting drugs would be those affecting *tissue systems*. Presumably, the subject of systemically important functions of the body such as muscles, nerves, and circulatory mechanisms has been well presented in the basic course of animal physiology. The pharmacologist further emphasizes the complexity of drug action relative to the functions of each of the body systems. The pharmacognosist makes use of such components as convenient sites of certain primary effects caused by cellular products of interest to him. In this sense he assembles such constituents so as to have this physiological relationship in common. It is not his purpose, for example, to expound on the mechanisms of neuromusculotropics, parasympthomimetics, sympathomimetics, and the vast stimulant and depressant antagonisms of the autonomic nervous system. Ob-

viously this is a part of the student's learning elsewhere. Thus, as a division of this grouping he selects type examples of those cellular principles constituting drugs which affect muscles, nerves, and tissue fluids by their passage into the circulation. He might use the division headings, ***myotropcs***, ***neurotropics***, and ***hematological agents***. (As sub-divisions.) In respect to the ***myotropic division*** there would be, for example, the constituents of ergot, posterior pituitary, digitalis, squill, curare, and viburnum. Wherever convenient to do so these might be further divided into stimulant and depressant types. The digitalis discussion would center upon the glycoside components, their relationships to glycosides and steroid complexes of other plants having similar use. The student would learn the basic structure of the digitalis glycosides. Methods by which these active principles are separated from leaf material are important. At this point the botanical aspects of digitalis species, the structure of the leaf and its preparation as a crude drug, including powdered drug, would be discussed. As has been followed in the case of other cellular principles type pharmaceutical preparations of the glycosides and crude drug would be given so as to serve as examples of the methods by which this drug is employed. Reference should be made to general glycoside synthesis in plants as has been presented under Part II.

Under the ***neurotropic*** organization many factors are involved which necessitate a general understanding of the physiology of nerves. The student will have learned many of these. He applies them in pharmacognosy. Wherever certain cellular entities primarily stimulate or depress certain neurotropic functions it would be convenient to group them accordingly. For example, sub-divisions such as ***central nervous system stimulants*** (caffeine, cacao, kola, nux vomica, strychnine, picrotoxin, lobeline, etc.), ***central nervous system depressants*** (opium alkaloids and scopolamine), ***autonomic stimulants*** (physostigmine, pilocarpine, ephedrine, epinephrine, etc.), and ***autonomic depressants*** (belladonna alkaloids, atropine, hyoscyamine, etc.) all constitute useful products of cells. For convenience, then, the teacher can present these substances grouped together as such. Emphasis upon the plant as a producer of each

of these and of the chemical nature of those which possess characteristics in common would be ideal. For example, as a portion of the discussion dealing with the plant as a producer of alkaloids one can obtain considerable data in the literature showing the probable mechanisms of alkaloidal synthesis in members of the *Solanaceae group*.[6, 7] Following such an introduction the instructor then proceeds to treat of the plants as sources, methods by which their parts are processed for these constituents and the value of them.

Hematological agents as a sub-division of cellular principles which affect tissues systemically would include certain hematopoietics, as liver extractives and folic acid; also the blood group, as fibrin, fibrinogen, thrombin, and vitamin K, plasma, and human serum. As current research progresses in this field still other substances or analogues of these might be introduced. The student learns the character, uses, and production of these cellular substances as agents having physiological roles in common and at the same time he recognizes them as important biological principles synthesized by cells.

Part III. d. Those functioning as specifics:

This sub-grouping fits adequately into the physiological pattern for it links together certain cellular constituents which have primarily a specific use. Such constituents as those used as antibiotics, antimalarials, anthelmintics, allergens, insecticides, and rodenticides illustrate specifics best adapted to the scheme. Obviously the sub-group should not include the larger group of therapeutic terms designed to describe the activity of drug substances which are best included elsewhere in the arrangement; for example, mydriatics (Belladonna), narcotics (Opium alkaloids), ecbolics (Ergot alkaloids), cathartics (Cascara Sagrada), and so forth.

In the discussion of the antibiotics, such as penicillin, streptomycin, tyrothrycin, aueromycin, and chloromycetin, the natural sources of these would be presented, together with the observa-

tions of important characteristics of their sources, their separation methods from living organisms, and the biological principles applied in their standardizations. Obviously natural antagonism systems learned in bacteriology or microbiology courses should be reviewed. Finally, a limited number of types of pharmaceutical preparations, including commercial specialties, would be presented in order to further familiarize the student with methods of use.

Antimalarial drugs follow two patterns. One represents those such as the natural alkaloids of *Cinchona* species; the second, the analogues (based upon use) plasmochin and atabrine. Although the latter would be cited, the natural alkaloids of cinchona, the story of cinchona bark, species relationships of the plant genus, cultivation and habitat factors and alkaloidal separation, including the production of quinine and totaquinine would be emphasized. Again, currently used preparations should be introduced.

Such cellular constituents as the oleoresin of aspidium, the oil of chenopodium, alkaloids of the pomegranate and areca nut, and the anhydride santonin, would illustrate drug substances from various plants which are made use of as anthelmintics. Chemical composition and methods of separation should be presented as far as possible. Dangers involved in usage could be pointed out from a public health point of view.

Under the sub-group insecticides the pattern would provide for the instructor to develop at will those constituents either produced by plants such as rotenone, pyrethrins, nicotine, oils, etc., or chemically synthesized insecticides and fungicides such as D.D.T., cyclochlorhexanes, etc.[8] Demonstrations of the effective nature of these on plants and the insects affecting them would serve a practical purpose. A limited number of commercial preparations should be included to illustrate currently used materials which some pharmacists handle. Rodenticides of plant origin and of various physiological usefulness could likewise be introduced under this category, with reference made to chemically synthesized agents having similar use.

Specifics such as serums and vaccines, initially derived from microorganisms and animal sera, and of glandular substances, including hormones, from desiccated animal glands or from animal secretions, would logically fall into such a pattern. However, many of these cellular substances, especially the important related synthetic hormones, are too extensive in subject matter to be covered adequately during the general course in pharmacognosy. Therefore, it is felt that they should be dealt with in available elective advanced courses in pharmacognosy which deal further with their nature as cellular substances comprising useful drugs.

Conclusions

The subject matter of the general pharmacognsy course can be organized according to a physiological pattern with emphasis upon cellular constituents of plants and animals. By directing the student learning towards the functional qualities of these substances, he is better able to coordinate their *uses* with other facts such as their biological and chemical history and production.

The didactic and laboratory work covering such a presentation would be arranged in three lectures and one two-hour laboratory period each week for two semesters or three quarters. The nature of the laboratory portion of the course will be suggested in a future paper.

The general framework outline of general pharmacognosy according to a physiological pattern is then as follows: (+ indicates additional examples.)

Part I. **Introduction:**

- a. **The scope of pharmacognosy**
- b. **Allied sciences related to the field**
- c. **Drug definitions and methods of evaluation**
- d. **Vegetable and animal nomenclature**
- e. **Literature references**
- f. **Historical references**

Part II. **An Introduction to Cellular Constituents:**

- a. **The cell as a physiological-chemical unit**

b. Type processes involved in biosynthesis
   1. Photosynthesis, the Krebs Cycle, etc.
   2. Protoplasmic and non-protoplasmic cell constituents (plants and animals)

Part III. **Cellular Constituents Comprising Drug Substances:**
a. Those which directly affect the skin and mucous membranes
   1. **Emollient Types**
      a. Fixed Oils—Linseed, Theobroma, Olive, +
      b. Fats—Lard, Lanolin, +
      c. Waxes—Beeswax, Spermaceti
   2. **Demulcents**
      a. Mucilages and Gums—Tragacanth, Acacia, Karaya, Elm, +
   3. **Dusting Powders**—Corn Starch, Lycopodium Spores
   4. **Astringents**—Tannic Acid, Gum Kino, Gambir
   5. **Irritants**—Mustard, Turpentine, Camphor +
   6. **Antiseptics**
      a. Tars—Pine, Coal, Juniper
      b. Balsams—Benzoin, Peru, Tolu, +
      c. Oils—Thymol, Wintergreen, +

Part III.
b. Those which directly affect the gastro-intestinal tract
   1. **Carminatives and Flavors**
      a. Labiateae (Mints)—Peppermint, Spearmint, +
      b. Citrus Fruits—Orange, Lemon, Bergamot
      c. Umbelliferae—Anise, Fennel, Caroway, +
      d. Miscellaneous Fruits, Seeds—Vanilla, Myristica, Cherry, +
      e. Rhizomes and Roots—Licorice, Ginger, +
      f. Barks—Cinnamon, Sassafras, +
   2. **Plant Bitters**—Gentian, Quassia, Chamomile
   3. Ferments—Pepsin, Rennin, Pancreatin, Malt, +
   4. **Evacuants**
      a. Colloids and Fibers—Agar, Psyllium, Karaya, +
      b. Vegetable Oils—Castor Oil, Olive, +
      c. Anthracenes—Cascara, Senna, Aloes, Rheum
      d. Resins—Podophyllum, Jalap, Colocynth

Part III.
c. Those affecting tissue systems
   1. **Myotropics**
      a. Skeletal Muscle—Curare Alkaloids
      b. Smooth Muscle—Ergot Alkaloids, Pitocin, Hydrastis Alkaloids, +
      c. Cardiac Muscle—Digitalis, Strophanthus, Squill, and Glycosides

2. **Neurotropics**
   a. Central Nervous System—Caffein, Strychnine, Picrotoxin, Lobeline, Opium Alkaloids, Scopolamine, + (plant sources included)
   b. Autonomic Nervous System—Physostigmine, Pilocarpine, Ephedrine, Epinephrine, Solanaceous Alkaloids, + (plant sources included)
3. **Hematological Agents**—Liver Extracts, Folic Acid, Fibrin, Thrombin, +

Part III.

d. Those functioning as specifics
   1. **Antibiotics**—Penicillin, Aueromycin, Streptomycin, Tyrothrycin, +
   2. **Anthelmintics**—Aspidium Oleoresin, Chenopodium, Areca, Santonin, +
   3. **Antimalarials**—Quinine, Totaquin, +
   4. **Allergens**—Pollens, Animal Dander, +
   5. **Insecticides**—Rotenone, Pyrethrin, Nicotine, Sabadilla, D.D.T., 1068, +
   6. **Fungicides**—Effect and Use of Copper, Lime, Mercurials, + on fungus tissues
   7. **Rodenticides**—Squill, Antu, Sodium Fluoroacetate, +
   8. **Herbicides**—2,4-D, Cyclochlorhexane, +

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A Biochemical Classification of Drugs of Natural Origin for the Purpose of Instruction in Pharmacognosy*

E. E. ROSCOE
Idaho State College

The Committee on Pharmacognosy of The Pharmaceutical Survey has presented in its report dated January 29, 1948, most of the advantages and disadvantages of several plans of organizing the subject matter of the course in pharmacognosy including a biochemical classification.

For several years we have been using a chemical classification for the course in pharmacognosy at Idaho State College. We were, therefore, quite interested and pleased when The Survey report recommended a very similar plan.

It appears that several teachers of pharmacognosy have been working independently to develop such a classification. It is to be hoped that by relating our experiences and comparing notes, this plan may be more rapidly perfected.

In my opinion the most important advantage of a chemical classification stems from the fact that in modern medical practice purified active principles are replacing galenical preparations and crude drugs. The pharmacist, therefore, is dispensing atropine, morphine, ephedrine, adrenalin, theelin, digitoxin, etc., instead of tinctures, fluidextracts and extracts. Even digitalis and its galenical preparations are being quite rapidly replaced by purified cardiac glycosides. As a consequence of this trend, crude drugs are of interest to the pharmacist mostly as sources of medicaments which he dispenses.

There are some noteworthy exceptions. Thyroid still has preference over thyroxin and the galencial preparations of cascara

*Read before the Conference of Teachers of the Biological Sciences at the 1949 meeting at Jacksonville.

are still preferred. A few others might be sighted, but the trend is certainly away from galencials and crude drugs in modern medical practice.

It seems to me that we teachers of pharmacognosy must be cognizant of these changes and modernize our instruction accordingly. The use of a chemical classification with emphasis on active principles is a great aid in that direction.

Another advantage of a chemical classification is the aid it provides in the process of eliminating the dead wood from the course in pharmacognosy. One will find in general that unless a crude drug yields an active principle or principles which are prescribed or used in preparations which are prescribed, the drug is now of no great importance.

I have been informed that some of our pharmaceutical chemists are somewhat disturbed about this biochemical approach to instruction in pharmacognosy. I want to assure them that I do not teach chemistry. I insist that students must have taken organic chemistry before they register for pharmacognosy. The student does have an opportunity to apply his knowledge of chemistry and this is sighted as another advantage of the biochemical classification by The Survey Report previously referred to.

We teach no more chemistry in our course in pharmacognosy than is commonly taught in plant physiology and animal physiology. Our first outline was prepared mostly from a text on plant physiology, not from works on chemistry.

Organic chemistry must be prerequisite to pharmacognosy when a chemical classification of the subject matter is used, otherwise the pharmacognosy teacher would be compelled to teach chemistry. This is not desirable for several reasons, but especially because too much time would be diverted from pharmacognosy.

It is quite obvious that organic chemistry must be scheduled for the sophomore year and pharmacognosy for the junior year,

in order to have the proper sequence of courses under this new plan. This, too, was recommended by The Survey report on pharmacognosy.

In the beginning of our experiment a chemical classification was attempted only for the drugs of vegetable origin and we called it a phytochemical classification. The syllabus was divided into two parts. Part I considered the drugs of vegetable origin and comprised the work of the first semester. Part II was concerned with the drugs of animal origin and the microbiological products. We simply followed the text for Part II and this was the second semester's work.

Each year changes were made and early in the experiment a number of drugs of animal origin were transferred to the chemical classification. For example the fixed oils, fats and waxes of animal origin could just as well be included when we were considering that group under the plant drugs. The same is true of the enzymes and coloring principles. We, quite obviously, no longer had a phytochemical classification and called it simply a chemical classification. Since publication of The Survey report, we have adopted the term biochemical as proposed by that report.

The outline of the course at present is about as follows:

Part I

Definition and scope of pharmacognosy—A brief history—Its place as an applied biological science—Its relation to other subjects in the pharmacy curriculum—The conventional plans of presentation, advantages and disadvantages—The advantages of a chemical classification, especially to the practicing pharmacist.

A review of photosynthesis with emphasis on its relationship to food, clothing, shelter, fuel and drugs. Types of compounds synthesized and/or stored by plants and animals—The physiological significance of such compounds—(Note that we do include some plant physiology in the course.)

Classification and Content

For the most part we follow the text when studying the individual drugs. Official titles, synonyms, official definition, description, active constituents, uses, doses, etc., are considered in the usual fashion.

Saccharides
- **Sugars**
  - **Monosaccharides—dextrose**
  - **Disaccharides—sucrose, lactose**
  - **Polysaccharides—starch, cellulose (cotton)**
  - **Complex saccharides—gums, mucilages and pectin—drugs containing them**
  - **Glycosides and Glycosidal Drugs**
    - **Cardiac—digitoxin, digitalis, etc.**
    - **Anthraquinone—aloin, aloe, etc.**
    - **Cyanophore—amygdalin, bitter almond, etc.**
    - **Phenol—arbutin, uva ursi, etc. (now mostly obsolete)**
    - **Thiocyanate—sinigrin, mustard**
    - **Saponin—senega, quillaja, etc.**
    - **Flavanol—rutin, buckwheat**
  - **Tannins and tannin bearing drugs**
  - **Fixed oils, fats and waxes**
    - **Those of vegetable origin**
    - **Those of animal origin**
  - **Volatile oils and related aromatic substances including tars**
  - **Resins and resin bearing drugs**
  - **Oleoresins, gum resins and balsams**
  - **Alkaloids and alkaloidal drugs**
  - **Drugs containing coloring principles**
  - **Drugs used for flavoring purposes not otherwise classified—yerba santa, licorice, etc.**
  - **Neutral principles—picrotoxin, chrysarobin**
  - **Enzymes**
    - **Those of vegetable origin**
    - **Those of animal origin**
  - **Drugs containing insecticidal principles**
  - **Drugs containing vermicidal principles**
  - **Drugs used as rodenticides**

Part II

Antigens—vaccines, toxoids, allergens, etc.
Antibodies—antitoxins, antibacterial sera, etc.

Antibiotics
Coagulants and hemostatic substances
Anticoagulants
Drugs containing hemopoietic principles
Vitamins
Hormones and glandular products
Miscellaneous drugs of vegetable and animal origin—chalk, cuttlefish bone, lycopodium, oxbile, charcoal, purified siliceous earth, etc.
Therapeutical classification of all drugs considered—analgesics, antispasmodics, oxytocics, etc.

The Early Days of the Pharmacological Society*

TORALD SOLLMANN
Western Reserve University

Making a speech is an ordeal to me, as bad as physostigma or sassy bark or the bitterwater of the Bible; although it is tempered by the pleasure of being able to speak at once to so many old friends and to those whom I would like for new friends, all bound together by our common interest in the truly fascinating subject of pharmacology. And on the general theory, I presume, that the present cannot be fully understood, and therefore the future cannot be prepared, except in the light of past experience, your officers have picked on me, as the oldest fossil here to tell about the early days of the Society. I fear that it was not a happy choice, for I have no illusions about my gifts as a speaker or as a historian. In general, my thoughts limp with the crutch of a pencil on the shining highway of paper; and to reminisce about the past, interestingly and accurately, one's thoughts must more-or-less dwell in it continuously. And while I love occasionally to *dream* in its rosy twilight, my *thoughts* dwell in the present and

*Address at the dinner of The American Society for Pharmacology and Experimental Therapeutics, Detroit, April 21, 1949. Publication granted at the request of the Editor.

my eyes on the future. And so—much of what I have lived has been buried with the dead and only some outstanding impressions survive of incidents that were, for one reason or another, especially interesting to me, though they may not be so to others—some words or acts that chanced to influence me. Besides, I happened to have some part in the play—and, contrary to common opinion, I hold that the actors are rarely good critics or even good reporters of the inner play of history. Even when they overcome personal bias, which is rare, they see the action only from a particular angle. To participate constructively in the action, they must endeavor to understand all sides of the questions, appreciate and even sympathize with those who happen to be on the other side; but they must necessarily see their own side best or they will be forever sitting on the fence.

I must, therefore, ask you to discount this talk. So many of the details which might interest you will be missing because they have not dwelled in my memory, because they were not particularly important or interesting to me. And if we agree that it is not the details, but the spirit of the times that make history, then I am reminded of the remark of Faust to Wagner:

> The past is to us a book with seven seals—
> That which **you** call the spirit of the times
> After all, is only our own spirit
> In which the times are dimly mirrored.
> "Mein Freund, die Zeiten der Vergangenheit
> Sind uns ein Buch mit sieben Siegeln;
> Was ihr den Geist der Zeiten heisst,
> Das ist im Grund der Herren eigner Geist,
> In dem die Zeiten sich bespiegeln."

So, after this discursive preamble, let us plunge into the subject! I would like to start with the Early Days of Pharmacology. But, what is "early"? Pharmacology is advancing so rapidly, that year before last seems a bit quaint—"old hat"! I take it that we need not go back to the Sumarians and Egyptians, which were even before my time, nor to the Indian medicine men, whose pharmacology was crude as compared to that of the Aztecs, and we may pass over the Colonial days which were chiefly a

carry-over of the medical scholasticism of Great Britain. In short, let us begin with the days that I have lived—they are early enough for the present purpose and they include, I think, all of what we now conceive as pharmacology, as a branch of natural science.

When I graduated from physiology into pharmacology fifty-one years ago, I found myself in distinguished company. There was the versatile, brilliant and wholly charming S. Weir Mitchell, who to his many other achievements added a classic study of snake venom, though his international fame rested chiefly on the Weir Mitchell treatment—an ultra-rest treatment for what was then called neurasthenia. He told me the story of an American patient who consulted a nerve specialist in Italy and was greatly puzzled when the doctor advised him to try the "Vermicelli Treatment". There was H. C. Wood I, also of Philadelphia, who wrote an excellent textbook of the existent knowledge of drug therapy, chiefly from the clinical standpoint. There was Samuel Meltzer of New York, a practitioner trained in the German school of physiology, who never outgrew his taste for research. He told me how he was working in the laboratory in Berlin with a tube in his esophagus registering the heart beats, when a party of high military officers came on a tour of inspection. The chief turned to the others and said: "Meine Herren, you think that you are brave but here is real bravery for you." Meltzer worked as a free-lance on his own until he was appointed to the Rockefeller Institute where he had the assistance of John Auer. He introduced the concept of the "factor of safety" as a biological principle, stressed magnesium as a restraining ion—the magnesium narcosis—and continuous pressure respiration, among other things. Simon Flexner told me that he appointed him ". . . because he knew that there would be something doing."

Note that those men were primarily full-time medical practioners, who made their bread and butter, and sometimes a little cake, out of private practice. They were not even on part-time medical school salary. What they did, they did on their own from pure love of the subject. When they started their work there were no chairs of pharmacology in any school in this country and

none abroad, except a few institutes in Germany. The subject was taught as "Materia Medica" through purely didactic lectures, generally by one of the minor members of the faculty who hoped that it might be the stepping-stone to something better—a hope that was usually disappointed. And naturally so, for what chance was there to show the metal of a man, by dry lectures on the botanical origin, constituents, traditional empirical uses, doses and incompatibilities? Those mills ground slowly and very small and very dry.

But a new era had already started when I arrived on the scene. The new concept of drug action as a branch of biological science, started in France by Magendie and Claude Bernard, in Germany by Buchheim and Schmiedeberg, struck root in the virgin soil of the scientific aspirations of American Medicine. Stimulated by the men who returned from European study full of the fermenting wine of medical advance, American medical schools felt a hunger that our country take a real part in this advance. As a necessary means to this end, they began to institute full-time chairs in medical sciences and to fill them with men who had been properly trained to make good use of the opportunity: William Welch at New York and then at Baltimore in pathology; Bowditch in Boston and Howell in Baltimore in physiology; Chittenden at Yale in biochemistry; Abel in pharmacology at Ann Arbor, then at Johns Hopkins; these set the model that served as catalyst for the rest. Abel was truly the father of American pharmacology, introducing and exemplifying the scientific concept of the subject as a biologic discipline. Trained by years of study abroad, primarily as a chemist and biochemist, he saw the broad fields of a pharmacologic Canaan spread out before him and went into them. Research was the breath of his life. When he was called to Hopkins he had no teaching duties in the first year and felt himself in Paradise. He was an idealist. Nothing but the stars could satisfy him, but he saw clearly that funds were necessary to pave the way to them—funds dedicated to pure science. For this reason, he was particular, even anxious, to differentiate pharmacology from materia medica, and especially from pharmacy, and to make clear that, though they may sound

somewhat alike they differ fundamentally. His spirit persuaded by its justice, his personality by its simplicity, sincerity and charm. He guided us all and I particularly feel ever grateful for this guidance when I was an inexperienced, ambitious but well-intentioned youngster setting out ill-equipped on the path of scientific exploration.

Cushny, who was called from Schmiedeberg's Institute to Ann Arbor, was probably the first English speaking pharmacologist in America who had deliberately trained himself for a career in pharmacology when there was no post in pharmacology in an English speaking country. G. N. Stewart, who knew Cushny in Strassburg, told me that Cushny fully knew that there was a risk, but canny Scotsman though he was, he took the risk with his eyes open and was rewarded with Ann Arbor, then University College, London, then Edinburgh, and so helped to carry the torch. He did beautiful work in research and completed the first textbook on pharmacology in English. When I started teaching the subject, some of my students voluntarily sent to Germany for Schmiedeberg's little Grundriss because there was no book in English. Had Cushny's been completed then, I might never had started on mine —but I probably would have, anyway.

And so there were now two full-time university chairs of pharmacology in America—Ann Arbor and Hopkins. The third, I believe, was established at my school, Western Reserve. About 1890 the school had been given what was then a very generous endowment—a quarter million—to improve medical teaching. Some thought that the income should be distributed among the clinicians who were running the school. But there were some Young Turks who held that this was a great opportunity to participate in the forward movement, and in 1892 to 1894 they brought a group of young, scientifically trained men to Cleveland; first in anatomy, then in physiology and pathology and physical diagnosis. Also in 1894 a young Clevelander, who had been assistant to Schmiedeberg, John G. Spenzor, returned to establish a practice in Cleveland, and the faculty decided to give him a chance in pharmacology—they had heard of the word. They estab-

lished and equipped a laboratory for him, but he never "took" well, and after a year "went over" to the other Cleveland school and the bud was blasted, or rather, returned to a dormant state. That turned out to be my opportunity.

I had returned from Europe in 1894 to complete my medical education at Western Reserve and G. N. Stewart had made me his assistant in physiology, which then included histology and biochemistry. I threw myself into this work with such enthusiasm that the faculty offered to try me in pharmacology. So—in 1898—in the good old tradition, the first course in pharmacology which I attended was one which I gave myself. The faculty then decided to send me to Schmiedeberg for a semester; and then established the third full-time department of pharmacology. From these three centers, and then from other centers which colonized from these or developed independently, pharmacology grew and spread. Abel developed first Reid Hunt, a fine, retiring, almost shy, wholly lovable man of excellent training, greatly influenced by Ehrlich as well as Abel, who went to the USPHS, the first government pharmacologist, then to Harvard where he had been preceded by Franz Pfaff, a typical Austrian, who held a part-time job, and who had as assistant a Louisianian, Vejux Tyrode, who fathered Tyrode's Solution. Then Abel trained Carl Voegtlin, Loevenhart, Macht, Marshall, Lamson and Geiling, which brings us down to date in that line.

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In Ann Arbor, Cushny had begot Edmunds, a diligent worker for many years in the Society as well as in research; and Edmunds begat Nelson. At Reserve we had the good fortune to train Hatcher for Cornell, Hanzlik for Stanford and many others. It would take too long to follow the progeny of these early patriarchs —may the wish stand for the deed.

You will realize that at first we pharmacologists were a very small group, knowing each other rather intimately. Abel kept us together to promote the common good of pharmacology. It was he who planned the Society and the Journal. He was so convincing and so right that we were glad to be his henchmen. Originally,

we pharmacologists and the biochemists were all members of the Physiological Society, which had been founded in 1887 and was still so small that there were not even sections. We all met as one group in an available classroom, generally during the Christmas vacation, along with the AAAS, and there was no crowding. The biochemists were the first to feel growing pains and in 1906 formed a society which we all joined; and the generosity of Christian Herter enabled them to start a journal, a first-class journal of which we all felt proud; but we had the urge to assert the individuality of pharmacology. And so, with Abel as protagonist, we founded the Society in 1908.

The first problem was a name for the expected infant. We would have liked to call it simply the American Pharmacological Society, but at the time this name was preempted by a commercial group, so we chose a longer name, adding "Experimental Therapeutics"—chiefly to emphasize the relation to chemotherapy, a tribute to the ideas of Ehrlich and a prophecy of things to come.

There arose at once a knotty problem, the pharmacologists in the employ of drug houses. There were only a few, one hand and some fingers left over; but Abel foresaw that they would multiply and perhaps even become the dominant element. That was a serious matter because American drug houses had not yet attained the vision that Science is a jealous mistress. They expected results that could be quickly translated into sales. Abel feared chiefly that they would stuff the programs and the Society with papers that would not promote the scientific status of pharmacology. He thought it better for them to organize their own society when they became sufficiently numerous. So it was decided to exclude them, although we felt badly about it, for some were good men and all were good fellows and we did not like to hurt their feelings by a holier-than-thou attitude. In fact, some of us never felt comfortable about it and the subject was brought up again and again, with various suggestions of partial membership, and was finally reversed with many unconvinced at the time. But some of us, especially Abel, Loevenhart and I, became convinced that the attitude of the firms was steadily improving, so

that the dreaded dangers had become negligible. We believed that this improvement would be aided if it were given this recognition. We felt that pharmacology would be strengthened if we recognized that this was a legitimate activity and that good men could enter this field without stigma and so we changed front, brought the question up in one meeting after another until a majority agreed. The outcome has fully justified the action.

The foundation of the Society was the first step in Abel's plans to strengthen pharmacology—the second was the Journal. We did not have an angel like Herter, but Abel interested Mr. Passano of the Williams and Wilkins Company to undertake the venture, under the condition that Abel would be the owner of the Journal, to be passed to the Society when its success was firmly established. It was his Journal, in every sense of the word; as always, the rest of us followed his lead—because it was always good, wise, unselfish, and idealistic.

In those early days drug therapy was almost wholly symptomatic, with a few exceptions, very few, but very important and prophetic. Symptomatic medication called for a better understanding of the actions of drugs and they were studied from this standpoint by applying the principles and methods of experimental physiology as laid down by Claude Bernard, but with a biochemical bias—under Abel's pervasive influence. The mechanisms of the actions were still almost completely beyond our means of inquiry. Even chemotherapy, by anthelmintics, by mercury and by quinine, was also wholly empiric. Salvarsan enormously enlarged the horizon; mercury was displaced by bismuth; trypanosomes and other protozoan parasites were drawn into the field; but the bacterial and virus infections were considered as unamenable to parasiticidal chemotherapy.

The era had become relatively stationary because new developments were limited by the want of a larger outlook, and details by the limitations of technical methods. The string, straw and sealing wax age had about reached the end of its string. Still—there were more than enough problems to keep pharmacologist

busy; more workers and better methods yielded more and more data about the actions of more and more drugs; but it was whispered that pharmacology had reached the state of diminishing returns and some were inclined to become a bit discouraged. This was understandable, but unwise. Such periods of apparent stagnation come in every branch of science, usually as a preparation to new lines of advance.

The impetus in this instance was furnished by the sulfonamides, which opened new horizons far beyond their own range, not only for etiological remedies, but also for visions of the *Ultima Thule*, the mechanism of action. As from a high mountain we see vistas of broad fields, great streams and currents—and—mountains beyond! They are yours to explore. And do not become discouraged when there are times when progress seems slow—keep on working. There comes to my mind an old parable: We have all watched some building going up. There are days and weeks when there seems to be apparent standstill. As we look at it day after day there seems to be no visible progress; then suddenly—almost over night a great change appears, the building shoots up, fills out, then again a period of seeming standstill and again a period of rapid progress. But all of the time, constructive work is going on in the building, whether it is conspicuous or not. It may not always be showy, but the work *is* there, *must* be there, whether it shows or not.

You younger men and women: keep your eyes on the mountains, but do not stop cultivating the plains. "All this is very fine, but let us cultivate our cabbages"—"*Cela est bien dit, repondit Candide, mais il faut cultiver notre jardin*". Do not expect to be always dining on pheasants and artichokes; do not make the mistake of despising corned beef and cabbage: they give you strength to scale those mountains, and the mountains cannot be scaled without them—ONLY—never rest *content* with humble results. Be not as he who digs eagerly for treasure and is happy when he turns up a fishworm.

"Mit gieriger Hand nach Schätzen grabt
Und froh ist wenn er Regenwürmer findet."

What One may Learn from Experimentation on a Single Animal*

HARALD G. O. HOLCK
University of Nebraska

In view of the fact that pressure is brought upon our schools to minimize the number of higher animals used in teaching and that it is difficult to find time to show the actions of some of the steadily appearing new remedies it seems highly worth while to get the maximum amount of information possible from experimentation upon a single animal.

Before going into details of the experiment that I want to discuss, it is desirable to mention that our students have already become familiar with the field of general anesthesia and with the actions of atropine and cocaine, and that we have thoroughly reviewed the factors that modify blood pressure, have familiarized them with the general arrangement of apparatus for recording blood pressure and respiration, and have demonstrated the physiological anatomy of the dog. The latter included the cardiac inhibition produced by electrical stimulation of the vagus and also the appearance and location of the more important abdominal organs.

In the present experiment the first lesson that the student learns is that the choice of anesthetic is important. Barbital and pentobarbital are unsatisfactory, whereas light anesthesia with paraldehyde or paraldehyde-morphine seems best. The major parts of this demonstration deal with the action of epinephrine hydrochloride on the blood pressure as modified by various methods of administration and by medication with other drugs. Respiratory recordings are made, but will not be discussed here. In the first phase of this experiment we attempt to use a dose which will

*Read before the Conference of Teachers of the Biological Sciences at the 1949 meeting at Jacksonville. The paper was illustrated at the points indicated in the manuscript by the word (Slide).

raise the blood pressure sufficiently to produce reflex vagal slowing of the heart rate with consequent sharp diminution in the rise of blood pressure. (Slide.)

When we have demonstrated the reflex vagal inhibition we repeat the dose which proved successful in causing vagal effects—allowing the blood pressure to return to normal between injections—and now, when cardiac slowing occurs, we slowly inject a small dose of atropine sulfate by vein. (Slide.) Usually this, with amazing promptness, protects the heart against acetyl choline so that the heart rate increases and the blood pressure rises sharply. The complete absence of vagal beats may now be shown by repeating the administration of the previous dose of epinephrine. At this time one may also demonstrate that dilute epinephrine solution, which on oxidation has turned pink after standing unprotected in a beaker at room temperature for a number of hours, has lost much of its action.

In view of the fact that in most colleges a separate course in bioassay is not required, we next proceed to demonstrate that when repeated injections of a dose of epinephrine, which produces a rise of about 40 mm. of mercury, is given, the rises in blood pressure are so similar that the strength of a sample of epinephrine of unknown potency may be ascertained to within plus or minus five per cent of reference standard epinephrine.

We also indicate that, in order to compare such rises in blood pressure, it is advantageous to use a very slowly moving drum so that we can get the high points sharply defined and placed closely together as shown in this slide. Of course, as we tell the students, the dog has to be standardized to show that it is sufficiently sensitive to changes in epinephrine dosage and that the rises with a given dose must be alike within specified narrow limits.

The next step in our demonstration is to show that unless epinephrine gets into circulation in sufficiently large amounts, blood pressure will not rise. Thus as you may see in the next

slide, when we inject under the skin a dose which is 20 times greater than the intravenous one previously employed, the blood pressure remains unaffected. However, some years ago my good friend, Professor A. B. Luckhardt, meditated on the problem of what to do with an asthmatic patient who had responded well to subcutaneously given epinephrine, but after a little while had a recurrence of symptoms which might necessitate a second call of a doctor, perhaps in the middle of the night. It occurred to him that although epinephrine put under the skin causes an immediate powerful vaso-constriction which limits its absorption, secondary vaso-dilation takes place as the first action fades away. He and Koppanyi then demonstrated that if one injects epinephrine under the skin of a dog and massages the injected area after half an hour or so it is possible to get enough epinephrine into circulation to cause a definite rise in blood pressure, and presumably to have a dilating effect on the bronchioles. A rise in blood pressure may be secured by massage after several hours (Slide); note especially the response after cocaine had been given. No such effect is shown by massage of a control area. This effect of massage was discussed in the American Journal of Pharmaceutical Education in 1937[1] and in various scientific journals.[2] Likewise it is shown that administration of large doses of epinephrine by stomach tube is ineffective and that the effect is absent or very slight following intramuscular injection, provided a blood vessel is not accidentally entered. After intra-muscular injection, massage may prove exective in brining sufficient epinephrine into circulation to raise the blood pressure. (Slide.)

Concerning methods of administration, another idea occurred to Dr. Luckhardt and is discussed in the reference just given and in other journals.[3] He had noted that sometimes production of local anesthesia in the various areas in the mouth was incomplete following administration of procaine with epinephrine; when a second dose was given, on the supposition that the procaine in the first ampul had lost some of its power, the patient showed signs of excitement. This would indicate that the drugs were being absorbed in undue amounts. Epinephrine may be shown to be absorbed from injections of the various areas involved in ex-

traction of teeth as indicated by rising blood pressure following doses of epinephrine much smaller than those given under the skin of the dog. In this slide you will see the effects of such injections. Of course, one should note that chances for absorption in a patient would be greater due to the fact that the tissues are apt to be inflamed. It can readily be shown that injections made through an opening in the abdominal wall into a vascular organ such as the liver—which simulates in blood supply that of a highly inflamed area—rapidly causes an elevation in blood pressure. (Slide.)

That the matter of absorption from injections into areas of the oral cavity is important is emphasized in a letter just received from Professor Luckhardt and from which I quote: "In some later experiments with some dentists from our Zoller Clinic we found that injections of the usual procaine solutions containing only 1:25,000 epinephrine into the sites of election for nerve blocking caused a prompt rise in blood pressure. In fact, in some experiments the normal blood pressure was doubled explaining why dentists often in susceptible patients see sweating and syncope (fainting) after nerve blocking injections. I thought the promptness of the rise without massage was due to the great vascularity of the gingivae."

As was previously stated, the physiological anatomy of the dog was carefully studied in a previous experiment. With a little practice there should be no difficulty in locating the left adrenal gland above the kidney with practically no disturbance to the contents of the abdominal cavity when one puts a hand into the previously made opening. That this gland acts as a storehouse for the adrenal hormone affecting blood pressure then may readily be shown by gently massaging the gland, causing a response similar in nature to that following the intravenous injection of epinephrine. (Slide.)

The next part of the experiment deals with synergism between epinephrine and cocaine. In the classical demonstration a dose of epinephrine hydrochloride producing a blood pressure rise of about

25 to 30 mm. of mercury was given by vein. After the blood pressure had returned to normal a milligram or two of cocaine hydrochloride per kilogram of body weight was then given by vein. With this dosage only the slightest temporary blood pressure rise is produced. Then epinephrine was injected a few minutes later and the blood pressure rise was much greater and more prolonged than before cocaine medication. It occurred to me that it might be interesting to administer the cocaine very shortly after the blood pressure elevation induced by epinephrine had started to fall. As you may note from this slide, by this technique we can demonstrate a second elevation in blood pressure. This would seem to indicate that the cocaine does more than prevent destruction of the injected epinephrine, because, if such were the case, the blood pressure should flatten out, whereas the pressure actually rises. Of course, one may also repeat the epinephrine administration when the blood pressure has returned to normal to finally secure the results shown by the classical technique, indicating that the synergism is quite persistent because cocaine is much more slowly detoxified than epinephrine.

The next phase of our experiment deals with the comparison of ephedrine and epinephrine effects on blood pressure. The students will learn that it takes much more ephedrine than epinephrine to produce a certain rise in pressure, that, following intravenous medication with either agent, the speed of onset of action is very rapid, but that the effect of ephedrine is much more prolonged.

One of the most puzzling phenomena in pharmacology is, that whereas cocaine improves the action on blood pressure by epinephrine it actually antagonizes that of ephedrine. In my first attempt to demonstrate this paradox, I used one dog for epinephrine and another animal for ephedrine, as you may see from pictures in a publication of 1933.[4] However, I found later on that the synergism with epinephrine and the antagonism to ephedrine may well be shown in one and the same animal. Thus, if a small dose of cocaine is administered when the ephedrine rise is well on the wane, it produces an almost immediate drop in blood pres-

sure, although with the dosage of 1 mg. per Kg. the pressure does not go down to normal. (Slide.)

In order to get still more information from this one animal we next administer enough ether or pentobarbital to make the dog become deeply anesthetized. After putting a loose ligature around the pyloric end and around the lower end of the esophagus, we now administer by stomach tube about 30 cc. of a 30 per cent sodium hydroxide solution. We gently remove the stomach tube to avoid any splashing of this powerful agent and quickly tie off the esophagus. The reason for the latter is that, although deep anesthesia tends to prevent vomiting, we must be doubly certain that no caustic vomitus will come in contact with the face or clothing of any attendant. A record is kept of the slowly depressant effect on blood pressure by this potent poison. Later we demonstrate the acute cardiac embarassment and rapid death which follows the injection of air into a vein (air embolism). We then ligate the pyloric end of the stomach, cut wide of the two ligatures and cautiously remove the stomach; place it in a large pan of water and cut it open; and change the water several times. To the students we now show not only the strong hyperemic condition of the inner lining of the stomach as indicated by the pink color, but also let them feel the soapy, slippery condition of this wall. If some area has been sufficiently weakened we demonstrate the ease with which a stomach tube may perforate it.

So as to bring out the importance of the effects of ingestion of a rapidly acting caustic, we discuss with the students the possibilities of the rather frequent accidental poisoning with lye when children unsuspectingly take a drink from a cup containing water softener when left on a chair or table on laundry days or when people take strong alkali for suicidal purpose. This is conveniently done ahead of time while waiting for blood pressures to return to normal. We go into the details of several actual cases of such poisoning and show them pictures—such as you see here—of the stomach and esophagus removed from patients who have died from such poisoning.[5] We also stress the greater danger of perforation of the stomach wall should a stomach tube be intro-

duced and of constriction of the gullet following such poisoning. We tell of the research work carried out in Chicago years ago on Fred Vlsak[6] who, as a child, accidentally drank concentrated alkali solution and later on had to have an opening made in his abdominal wall in order to be able to feed himself after the esophagus had completely closed up.

Thus, to summarize, the students have learned from experimenting on a single animal that the proper degree of anesthesia is important, that the vagal inhibitory reflex is elicited by a sharp rise in blood pressure and that atropine almost immediately blocks this reflex. They have seen that the blood pressure responses following administration of a suitable dose of epinephrine at short intervals are so constant that epinephrine may be standardized by the blood pressure method. They have been impressed by the facts that, whereas epinephrine injected by vein causes an immediate, powerful, but brief rise in blood pressure, no effect is visible when the drug is administered orally, into a muscle, or under the skin; however, in the latter case hemodynamic action was evidenced repeatedly and for a number of hours by massaging the injected area. The probability of absorption of procaine and epinephrine from areas in the oral cavity and the significance of this in dental practice has been discussed. Injection of epinephrine into a highly vascular area, namely the liver, has been demonstrated to cause a prompt elevation of blood pressure and massage of an adrenal gland to have a similar effect. Immediate synergism between cocaine and epinephrine has been demonstrated and it has been shown that the action of ephedrine on blood pressure differs from that of epinephrine in important quantitative aspects; also that with ephedrine antagonism to cocaine exists. Finally, in combination with causing death by air embolism, several phases of acute poisoning by concentrated alkali have been demonstrated and the matter of serious sequelae discussed.

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A competitive examination for appointment of Medical Officers in the Regular Corps of the United States Public Health Service will be held on January 9, 10, and 11, 1950. Examinations will be held at a number of points throughout the United States, located as centrally as possible in relation to homes of candidates. Applications must be received no later than December 12, 1949.

The Regular Corps is a commissioned officer corps composed of members of various medical and scientific professions, appointed in appropriate professional categories such as medicine, dentistry, nursing, engineering pharmacy, etc. All commissioned officers are appointed to the general service and are subject to change of station.

Application forms and information may be obtained by writing to the Surgeon General, United States Public Health Service, Federal Security Agency, Washington 25, D. C. Attention: Division of Commissioned Officers. Applications received after December 12 1949, will not be accepted for this examination, but will be admitted to the examination in May, 1950.

NEW IN THE FAMILY

David Pattison Klemme.—Born August 26, 1949, son of Dr. and Mrs. Carl J. Klemme, St. Louis College of Pharmacy.

Marilyn Justine Kozitsky.—Born September 18, 1949, daughter of Prof. and Mrs. John Kozitsky, Temple University.

Reports of Officers, Committees and Delegates of the American Association of Colleges of Pharmacy at the 1949 Meeting at Jacksonville

(Continued from the July Number)

Report of the Committee on Audio-Visual Education

The Committee on Audio-Visual Education for the A. A. C. P. has been unable to carry out an active program during the past year pending action of the Executive Committee in sponsoring a proposed film catalogue. Although a formal report of the year's activity does not constitute a report of accomplishment, the discussion of certain aspects of audio-visual education has been compiled by the Committee.

Visual and Audio Educational Aids

Audio-Visual education may be regarded as that phase of education which deals with the use of any teaching aid, whether purely audio, as a sound or voice recorder, or purely visual, as a chart or picture, or any combination thereof. Unfortunately there are some who view audio-visual education in terms of sound motion pictures only, and who display little appreciation for the educational value of other properly-used teaching aids. The Committee wishes to clarify its position by adhering in principle to the definition as stated above.

It must not be assumed that all audio and visual aids in education are modern. Witness the use of the blackboard and chalk, the lecture demonstration, the use of maps and charts, etc., through countless generations. These are only a few of the many devices that are used daily but which are seldom classified in the light of their use as audio-visual teaching aids. The recent war emphasized the value of sensory teaching methods and devices in training programs and pointed the way for their applications in programs of higher education. At the present time vari-

ous types of wire and tape recorders are being used effectively in industry and educational institutions. It has come to the attention of two of us that these devices provide a potent teaching aid for the presentation of certain types of prescription training in colleges of pharmacy. Television becomes the most recent audio-visual aid, and although its usefulness and its application remain completely unexplored, pioneering has begun in medical education toward the utilization of this most recent tool. New motion pictures of scientific, professional, and educational nature are being introduced from time to time. Some of these releases are of unquestionable teaching value while on the other hand many are very mediocre and their value in pharmaceutical instruction is questionable. The Committee wishes to emphasize its feeling that films, or any teaching device, should not become a crutch to the instructor which may well happen if too much dependence is placed upon the use of mechanical or electrical substitutes. A teaching device is useful if it simulates a situation or experience which cannot be brought to the student in its original form because of insurmountable technical difficulties. Motion pictures or other types of visual instruction must be used sparingly and with good judgment at all times lest the student fails to participate in the instruction and assumes the position of a mere spectator or of a disinterested observer. Even with the limited use of motion picture films and similar teaching aids great care must be exercised lest a class fails to attend to the details of presentation with the same degree of thoroughness they might be expected to give to a conventional lecturer.

Exchange of Ideas

One of the important functions of any committee is to express the ideas and will of the parent organization. Hence this Committee feels that one of its responsibilities is finding a means for bringing the experience of all teachers of pharmacy and related subjects to bear on the problem of selection and recommendation of suitable audio-visual aids. The publication of pertinent new material such as lecture demonstrations, discussions,

interviews, improved presentation of classical material and clarification of new theory has its place in recognized journals. The Committee hopes that these channels may be made available for the exchange of vital information concerning pharmaceutical education.

Another method that would tend to foster an exchange of ideas among teachers and students in pharmacy is through one of the commercial agencies for the distribution of teaching material, especially of 2 x 2 color films or slides. These films are very easy to make, and are being made by thousands of amateur photographers all over the United States. The quality of many of these slides is good, and with sufficient consideration given to technical details such as exposure, lighting, and composition, excellent teaching material can be obtained. If sufficient interest in creative work of this nature could be stimulated, it might be possible, with the approval of the Association, to make arrangements with the Society for Visual Education for the sale and distribution of these items to interested teachers. Such a plan would make it possible for teachers and students alike to sell original 2 x 2 slides to the central agency on a royalty basis and would likewise make it possible for teachers in the entire United States to purchase copies of this material at the regular rate. Financial remuneration to contributors would be nominal, but the opportunity for service on the part of those who may have valuable material to contribute, and the opportunity for ready access to commercially available 2 x 2 slides will greatly facilitate an exchange of ideas that may be expressed through this medium.

Education Motion Picture Films

The Committee is already committed to investigate available sources of valuable 16 mm. films suitably synchronized either for sound track or other types of voice record, or those of the silent type. The project proposed by this committee in 1947 was the compilation and publication of a film catalogue whereby existing films of educational, professional, and scientific interest might be

catalogued in a single pamphlet for distribution to the member colleges. The approval of the Executive Committee was obtained during the past year, but the present printing costs seem to prohibit the publication of such a project through the American Journal of Pharmaceutical Education as originally planned. At the present time the Committee is considering how best to compile and present this material in view of the somewhat limited financial assistance available from the Association. The most complete compilation of chemical films is a publication of the American Chemical Society which catalogues approximately one thousand films of possible educational use in the various areas of chemistry. This bulletin (Bulletin 2: Films on Chemical Subjects, 1946) of some 50 odd pages is available from the offices of the American Chemical Society, 1155 Sixteenth Street, Northwest, Washington, D. C., at the nominal sum of fifty cents. The Committee recommends strongly the use of this catalogue in selecting films of chemical nature for use in pharmaceutical education. Other lists of films are available from the offices of learned societies, the offices of audio-visual education in various colleges and universities, from offices of public health agencies, and from various commercial manufacturers. The Committee wishes to emphasize that the use of any list of films without some description or testimony regarding the value of the many entries should be done with considerable caution.

The Committee feels that when new films have been released and some member of the Association has witnessed a showing, a short review should be written and submitted to the editor of the Journal or to the chairman of the Committee, in order that such reports might be published.

Charts and Models

The Committee strongly recommends the constant use of the periodic table of chemical elements in connection with instruction in chemistry and certain areas of pharmacy instruction. Such tables are available commercially and their use and value have

been well established. Hence no special attendtion is warranted except to emphasize the importance of this valuable teaching aid. Modern research dealing with organic chemistry requires the use of precision models of atoms which may be combined together to represent molecules. The Committee calls attention to the value of these models, not only as a research tool, but as a teaching aid in the presentation of certain phases of pharmaceutical chemistry Other models of less value may be made available to advantage, although it is important to warn against the indiscriminate use of model building as a substitute for laboratory work.

Sound Recorders

Wire recorders or tape recorders are at present available at a cost not exceeding $500.00. The better instruments seem to be practical from a technical point of view and may be used to facilitate preparation of lecture material or report writing. If this use is contemplated it is necessary to secure an instrument specifically designed to provide a foot pedal for the stenographer. Many new uses of the voice recorder will present themselves to the alert teacher. Considerable experimental work with the wire recorder has been done at the University of California College of Pharmacy in connection with class room teaching. There seems to be innumerable specialized uses for class room instruction, but the instrument is of questionable value for the presentation of lecture material. At the present time the instrument is being used in the Dispensing Pharmacy laboratory as a means of simulating inter-communication systems in large office buildings where the pharmacist may receive many audio instructions from electronic devices. The instructor places the assignment on the wire at his convenience in a manner calculated to imitate the clinician in giving instructions to the pharmacist when a direct wire contact is available. The opportunities for effecttive application of the voice recorder in this area are unlimited, but before camplete evaluation of this instrument as a teaching aid is possible considerable expermental development is necesary.

The Committee on Audio-Visual Education hereby recommends that:

1. The editor of the Journal be instructed to provide space in each issue of the Journal, such space to be devoted to reviews of Audio-Visual teaching aids, including films, slides, charts and necessary equipment.
2. The Committee on Audio-Visual Education be charged with the responsibility of preparing reviews of currently available Audio-Visual materials to the editor.
3. The members of the Association be encouraged to submit reviews of new Audio-Visual teaching aids to the chairnan of the Committee on Audio-Visual Education.
4. The Committee on Audio-Visual Education continue to foster the use of Audio-Visual teaching materials in pharmaceutical education.

D. C. BRODIE, *Chairman*

Report of the Committee on Emergency Problems

Only one problem has been referred to the Committee. The Executive Committee at its meeting in December, 1948, in Chicago, directed the Committee on Emergency Problems to study the Selective Service Act as it touched students of pharmacy and develop a plan for their deferment as the facts warranted, and submit it for consideration.

The Committee held a meeting in Richmond, Virginia, in February. Most of the members were present as was President Hayman. The Chairman conferred as directed with Dr. Robert P. Fischelis by telephone and letter correspondence.

Since the induction provisions of the Selective Service Act had been suspended for an indefinite period, the Committee decided there was no basis for setting up a program to be supported in the interest of students in the schools and colleges of pharmacy.

For your information, in October 1948, Dr. Fischelis addressed a letter to all deans of schools and colleges of pharmacy to obtain their views on the deferment and/or the necessity for deferment of students of pharmacy. I quote a summary of the replies as prepared by Dr. Fischelis.

"A total of 68 replies have been received to our letter requesting the opinion of deans of colleges of pharmacy on the deferment of pharmacy students. The replies may be summarized as follows: 6 indicated that no blanket deferment of pharmacy students is justified; 18 recommended blanket deferment of pharmacy students; 11 believe that deferment of pharmacy students should be on the same basis as deferments for students of medicine, dentistry, and related professions; 31 recommended limited or partial deferment.

"Of these: 12 suggested deferment of upper classmen; 7 suggested deferment on the basis of scholastic ability; 10 suggested deferment on other bases (including 2 who suggested deferment on quota basis using The Pharmaceutical Survey replacement factor; 1 suggested that all students enrolled in pharmacy units of R.O.T.C. be deferred; 1 made no recommendation."

Since the enrollment in the colleges of pharmacy has now reached a number in excess of 20,000, indicating a large increase in the number of graduates over a four year period, and presumably for additional years, it is the opinion of the chairman that it would be difficult to make a dependable case for the blanket deferment of our students if induction should be resumed. We should bear in mind that for a good many years, the colleges graduated about 1,600 annually. While a personnel shortage exists, the present enrollment should in due course take care of the deficiency.

The Committee stands prepared to function if Selective Service again becomes active or if a National Emergency arises.

H. Evert Kendig, *Chairman*

Report of the Committee on Predictive and Achievement Tests

After this Committee's brief report at the 1948 Association meeting its recommendations were favorably considered by the Executive Committee. Furthermore, there were several indications that this Committee would have an opportunity to activate and renew in part some of its functions.

A number of items were referred to this Committee by the Executive Committee. These included a request for a report on the proposed Pharmacy Quest, in addition to the consideration of and action on several resolutions designed to implement the activities of this Committee.

Pharmacy Quest

This Committee was instructed to investigate, with the help of Doctor Elliott, the possibility and advisabilty of a Pharmacy Quest. Although we have not completely examined all of the possibilities there is reason to believe that such a Quest may be an interesting and worthwhile project. However, it is felt that this Committee should not commit itself to any further work until it has received the necessary help and support in thoroughly implementing the present program of predictive and achievement testing.

Executive Committee's Resolutions

Three resolutions which originated from the Executive Committee were submitted as directives. This report will briefly summarize the considerations given to these resolutions and ultimately state this Committee's action in answer to these directives, in the form of several recommendations.

The first of these resolutions is as follows: "It was moved by the Executive Committee that the Committee on Predictive and Achievement Tests be directed to survey the program now in progress and estimate the cost for the continuation of such a program for further consideration by this Committee."

At the present time there is no testing program in progress by either The Pharmaceutical Survey or this Committee. Dr. Remmers, Director of Student Personnel Studies and in charge of The Pharmaceutical Survey's testing program, states that it would cost from $5.00 to $10.00 per student to continue the Predictive Testing Program and from $5.00 to $10.00 more per student to continue the Achievement Testing. He further suggested that the Educational Testing Service at Purdue University would be willing to handle all of the routine for both the Predictive and Achievement tests at $15.00 per student.

In the "Findings and Recommendations of the Pharmaceutical Survey, 1948," page 25, part of Recommendation No. 2 states that "the tests are to be administered by the individual colleges" and further "advised, in this connection, that the institutions provide the cost and that the association seek the counsel and cooperation of the recently formed Educational Testing Service."

On the basis of this recommendation, we susgest that each college administer the tests and also pay for them. Many of the colleges are associated with large institutions which have their own testing department. Naturally those schools would seek the advice and service of the testing department within their own institutions. It would be poor economy for a college to pay another institution for this service in such cases. Therefore, each college, wherever possible, should continue the predictive and achievement testing program with the advice, help and service of its own institutional testing bureau. Where this is impossible, this Committee would be willing to direct that college to a centrally located testing bureau.

If the colleges are unable to provide for the cost, perhaps they could assess each student a special matriculation fee of $15.00 to be used toward the costs of the testing program.

However, each college should calculate the several monetary advantages which can be gained from the predictive tests. For example, it is estimated that each freshman student costs an institution between $400 and $500. If by the means of these predictive tests, an institution discovered that four applicants out of the 100 to be admitted were misplaced or unsuited to pharmacy, it would immediately represent a saving of $1,600 which would more than pay the entire cost of the testing program.

Results of the Achievement Tests may be used as a part of the recommendations toward the establishment of a pharmacy graduate's professional career. These same results may also be used in various ways by the different state boards of pharmacy. Lastly, they will give the colleges an opportunity to compare the effectiveness of their curricula. This should competitively promote the standards of pharmaceutical education. Another set of achievement tests originating in each college, which would be based on special interests stressed in that particular college, would provide added local values.

In the past, very little encouragement has been offered the Achievement Tests. More effort should be put forth toward the improvement of these tests for both national and local usage. The results from these tests can become one of the most important criteria in evaluating the educational development of the student during his period of training. This may give a justifiable point to the state boards in support of their proposal that written examinations are no longer necessary.

The second resolution is as follows: "Proposal that the Committee on Achievement and Predictive Testing be authorized to develop a plan for administration of Predictive and Achievement Tests as a basis for membership in the American Association of Colleges of Pharmacy."

A plan for the administration of Predictive and Achievement Tests should begin with this Committee. First, this Committee should be continued as an agency to implement the testing program in all colleges and should follow very closely the testing activities of each college. In addition to the usual committee members, it would be well to have an additional member, technically competent in this type of work, who would have the time to carry out the details of this Committee. With the help of this person, the Committee could then act in an advisory capacity to each college administering its own tests. In this manner, the college would be allowed much more freedom and independence and such privileges would result in better cooperation with this Committee. All the while, this Committee would be in a position to bring in a report of each college's testing activities.

The last of these resolutions is as follows: "Resolved that the American Association of Colleges of Pharmacy Committee on Achievement and Predictive Testing be authorized to design such a test to be used as a basis for admission to our schools and colleges."

In the "Findings and Recommendations of The Pharmaceutical Survey, 1948," page 25, Recommendation 1, A, "It is recommended that each of the accredited institutions utilize recognized intelligence and aptitude tests as constituent factors for the selection and admission of students."

A number of the "recognized intelligence and aptitude tests" which have been employed in the past by The Pharmaceutical Survey are as follows:

American Council Education Psychological Examination
Cooperative English Test
Purdue Mathematics Training Test
Purdue Physical Science Test
Pharmacy Background Test

From this group we may suggest that the schools and colleges select a battery of tests which would be most fitted to their

needs and administer them as their set of predictive tests. The results from these tests should then be used as a part of the determining factor for the selection and admission of students. This would allow each institution to include in its screening program whatever other data it found to be valuable. Such other values to be considered would be the results from personal interviews, high school records, profile charts of high school teachers' opinions and profile charts of employers' opinions.

In conclusion, the important work of this Committee would be to see that each school and college employed some type of a testing program as a basis for the admission of students. Each testing program would be made up in part from those tests previously listed, with the help and advice of this Committee.

More detailed information may be had by consulting the Reports and Findings of The Pharmaceutical Survey's testing program. These reports appeared in the January 1949 issue of the American Journal of Pharmaceutical Education.

Recommendations

Recommendation No. 1. Recommend that this Committee begin at once, fall of 1949, to implement the continuation of the Predictive and Achievement Testing program.

Recommendation No. 2. Recommend that all member Colleges of the American Association of Colleges of Pharmacy individually administer the Predictive and Achievement Tests under the direction of this Committee and that each institution provide for the cost of its own program.

Recommendation No. 3. Recommend that each of the accredited member colleges of the American Association of Colleges of Pharmacy "utilize recognized intelligence and aptitude tests as constituent factors for the selection and admission of students" thereby conforming to the recommendations of The Pharmaceutical Survey.

Recommendation No. 4. Recommend that the Association employ a qualified individual to assist the Committee in directing the administration of the Predictive and Achievement Tests, to serve as an advisor

to the colleges when necessary, and to coordinate the testing activities of each college.

RALPH F. VOIGT, *Chairman*

Report of the Committee on Relation of Boards and Colleges

This year's early meeting of the American Pharmaceutical Association and of the American Association of Colleges of Pharmacy has seriously affected the number of meetings held by the District groups. In general the meetings were scheduled earlier in the year than usually and this was particularly unfortunate because of the extremely severe winter which some of the western states experienced. These factors caused four Districts to call off their meetings. Several of these will, however, be held this Fall. The meetings that were held were well attended and the programs in general were largely influenced by the report and recommendations of The Pharmaceutical Survey. Numerous resolutions were passed in connection with this report and no doubt will be brought up during some other part of the program of this meeting.

District No. I

District No. 1 held its meeing at the Massachusetts College of Pharmacy, Boston, Massachusetts, on March 14th and 15th.

Next year's meeting will be held in Providence, Rhode Island, at a time still to be determined.

Numerous interesting and valuable papers were read during the two-day meeting covering such subjects as The Pharmaceutical Survey, the Modernization of Licensure Examinations and In-Service Training for Pharmacists.

District No. II

The meeting of District No. 2 was held February 13-15, 1949 in the Hotel John Marshall, Richmond, Virginia. In addition to the usual committee reports there was a panel discussion concerning the six-year course in pharmacy and on the modification or abandonment of practical experience as a licensure requirement. A number of other interesting and well prepared reports were read. The District Meeting was honored by the presence of President J. Lester Hayman, who presented a paper on The Pharmaceutical Survey and the A.A.C.P.

Next year's meeting will be held in Pittsburg, Pennsylvania.

District No. III

District No. 3 held no meeting this year. Secretary H. C. McAllister reported that he had polled the members in the District to determine whether there was a large demand for a meeting. The majority felt that in view of the early Jacksonville Meeting of the A.Ph.A. and the A.A.C.P. there should be no meeting of the District group this year. The members will have an informal gathering at the Jacksonville Meeting to determine whether or not the next meeting should be in the Fall or in the Spring of next year.

District No. IV

Secretary Edward J. Rowe reported that District No. 4 meeting had been postponed by unanimous consent of the members until the Fall of 1949.

District No. V

The officers of District No. 5 postponed their meeting indefinitely because of the unusual winter which they experienced

this year. The heavy snow and cold weather made transportation practically impossible for considerable periods of time. They experienced the worst winter in many years and felt that they had no assurance that road conditions would be sufficiently improved by the time of the meeting to make it possible for the members to attend.

District No. VI

District No. 6 held its meeting in the Roosevelt Hotel, New Orleans, Louisiana on March 2nd and 3rd. Numerous papers were presented on timely pharmaceutical problems, many of them covering recommendations of The Pharmaceutical Survey. An elaborate entertainment program, particularly for the ladies, was provided for those in attendance.

The place of the next meeting will be Dallas, Texas, some time in late March or early April 1950, the exact date to be decided upon at a later time. It is interesting to note that the students of Loyola University, College of Pharmacy conducted the registration of the delegates, acted as hosts for the meeting and were very active in conducting sight-seeing trips for those present.

District No. VII

The meeting of District No. 7 was held in Missoula, Montana, on March 11th and 12th. The program was well arranged and aroused considerable interest and discussion. The meeting was held in the Student Union Building of Montana State University and also included a luncheon and dinner at which Mr. R. C. Schofield was the speaker.

It was decided to hold the next meeting in Corvallis, Oregon, in March or April 1950.

District No. VIII

No meeting was held by the District No. 8 group. The scheduled meeting was to be held in Reno, Nevada, but weather conditions made it inadvisable to carry out the plans. Furthermore, it was deemed more desirable to hold the meetnig in the Fall because of the April meeting of the A.Ph.A.

HUGO H. SCHAEFER, *Chairman*

Report of the Committee on the Status of Pharmacists in Government Service

The membership of this committee was constituted at the beginning of the pharmaceutical year, as follows:

Dr. Robert L. Swain, J. Doyle Norris, George I. Martin, representing the National Association of Boards of Pharmacy. Dr. David B. R. Johnson, Dr. Henry S. Johnson, Dr. Charles H. Rogers, representing the American Association of Colleges of Pharmacy. Dr. John, Dargavel, George Frates, Roger Lusby, representing the National Association of Retail Druggists. Dr. Andrew G. DuMez, Hans S. Hansen, Arthur H. Einbeck, representing the American Pharmaceutical Association.

Dr. R. Blackwell Smith, Jr., was named to the committee upon the untimely and unfortunate death of Dr. DuMez. The

loss of Dr. DuMez to the field of pharmacy will long be felt. His contribution to the progress made by this committee during the crucial years just passed is unparalleled. The permanent record of his testimony at the congressional hearing will perpetuate his memory and bear witness to his efforts in behalf of pharmacy. We will miss his guidance.

A study of the reports of this committee over the years, gives evidence that there is a marked and increasing growth of pharmaceutical prestige in the various government agencies. This is of particular satisfaction to the members of the committee who, by their service in pharmacy in their several spheres of influence, have been contributing to the enhancement of this prestige.

The fact that there are now pharmacists in key positions in all of the governmental bureaus concerned, has facilitated the work of this committee. As these men, thru their competence and eagreness to serve, progress, the profession as a whole progresses with them. It has been our policy this year, to meet with these men from time to time, to discuss various problems affecting pharmacy personnel in the respective bureaus. Many problems have been solved in this way. Others will be solved by lending our support to them, to their recommendations, to corrective legislation as needed, and by maintaining favorable public relations, to assist in a general way.

In conformance with this policy, the Steering Committee, comprised of the chairman, with Dr. Robert Fischelis, Secretary of the American Pharmaceutical Association, and George H. Frates, Washington Representative of the National Association of Retail Druggists, met in Washington on February 17th.

Discussions were had with the following officers:

Colonel O. P. Goriup, Chief, Medical Service Corps, US Army
Commander W. Paul Briggs, Chief Pharmacy Officer, US Navy
Commander George Archambault, US Public Health Service
E. Burns Geiger, Chief, Pharmacy Division, Veterans Administration.

All of these officers plan to be at the Jacksonville meetings and will make some further contributions to this report.

Digests of the information obtained are presented herewith and will indicate the progress that has been made during the year, as well as a few of the problems that are now facing us.

A. *The Army*

Last year we discussed the appointment of Colonel Goriup, a pharmacist, to head the Medical Service Corps. This year we can report further progress in that Major John Painter has been appointed to head the Pharmacy Administration and Supply Section of the Corps. Major Painter, registered pharmacist, was graduated in 1937 from the pharmacy school of the University of Minnesota with a B.S. degree. As the head of the largest section of the Corps, with responsibility not only for pharmacy administration but many auxiliary functions as well, his will be the job of makng pharmacy "click" in the Army.

This appointment is in line with commitments made by the Surgeon General to the profession at the time of the congressional hearings in connection with the Medical Service Corps Bill, and fulfills the promise of Surgeon Generals Kirk and Bliss, that the appointee to this position would be a graduate of an accredited school of pharmacy. The acknowledgment that a qualified pharmacist is needed to direct the activites of this section with its broad responsbilities, emphasizes the wisdom of Dr. Kendig's battle for the Pharmacy Corps.

It is understood that Major Painter will be at the Jacksonville meeting.

Colonel Goriup stated that except for those few places which are being held for outstanding ROTC graduates, there are no vacancies in the Pharmacy Admnistration and Supply Section of the Medical Service Corps of the Regular Army. There are at this time 75 pharmacists among the 640 officers in the section, and the

majority of these 640 officers received regular Army commissions through the integration program on the basis of their war-time experience.

B. *The ROTC*

Currently, there are ROTC units at four colleges. Each is under the supervision of an assistant professor of Military Science and Tactics who is a pharmacist, and who in each instance is taking graduate work leading to a higher degree. Reports from the deans of the colleges concerned indicate that this program is making fair progress. However, some problems have been presented and these are being studied by the service heads and solutions are being sought. One specific problem is the difficulty encountered in creating interest in the ROTC program. A number of pharmacy students were reluctant to participate because of the required six week military training period which operates to extend the practical experience period which many boards of pharmacy now requre for registration. The committee discussed this matter with P. Costello, Secretary of the National Association of Boards of Pharmacy. Secretary Costello pointed out that in light of recommendations of The Pharmaceutical Survey group, it is hardly conceivable that attendance at ROTC camps would be credited as practical experience. He further pointed out that should any state see fit to grant such an easement, individuals so credited would encounter difficulties in connection with reciprocal licensing. Such action would seem to be impractical and might result in the development of more serious problems.

It is not anticipated that additional ROTC units will be created in the near future, altho this would be desirable. It is anticipated, however, that some provisions will be adopted to make reserve commissions available to graduates of other pharmacy schools and to provide such graduates with the oportunity to obtain regular Army commisions. The committee will keep informed of this phase of the planning.

Another matter to keep in mind is the present 2 per cent limitation of colonels, even though this is held by Colonel Gorip not to be of immediate concern. This, as well as several other problems will require legislative action to solve. The necessary legislation is being drafted by the services and will merit the support of this committee.

The Medical Service Corps will continue to offer commissions as first lieutenant to pharmacists and others who have degrees in those sciences allied to medicine, particularly those with the degree of Doctor of Philosophy, e.g., some 90 Ph. D.'s in clinical psychology will be sought, as well as biochemists, bacteriologist, serologist, parasitologists, etc., with ultimately 300 in the allied science group.

Colonel Goriup called atention to a fifteen page booklet which was issued this year by the Medical Service Corps and distributed to colleges, state pharmaceutical associations, and other interested groups. This issuance gives a resume of opportunities in the Medical Service Corps for the following experts and specialists: pharmacists, optometrists, sanitary engineers, clinical psychologists, psychiatric social workers, business managers, bacteriologists, biochemists, entomologists, parisitologists, clinical laboratory specialists, nutritionists, research psychologists, toxicologists, industrial hygienists, and industrial hygienic engineers.

From this impressive list we realize that there are many fields to which pharmacists can progress thru advanced education and specialization, from the usual assignment of pharmacists within the service, which are listed in the referenced publication as follows:

1. **General and Station Hospitals, where they work with the Chief of Medicine.**
2. **Medical Supply Depots.**
3. **Other medical installations where their specialized knowledge can be utilized in supply and administration.**
4. **Medical Department technical schools where they are assigned as instructors.**

5. **Research ad development.**
6. **Army and Navy procurement offices.**

Regulations concerning admission in regular and reserve components of the Army are revised from time to time. It is wise for all interested persons to contact the Chief, Procurement Branch, Personnel Division, Office of the Surgeon General, Department of the Army, Washington, D. C., for full information and applications.

C. *The Selective Service*

Under the draft regulations, pharmacists who are called for service may make application for a Medical Service Corps commission. If vacancies exist, the applicants will be screened and the best officer material will be selected to fill such vacancies. Other, and/or in the absence of vacancies, all pharmacists called to service under these regulations, will be required to serve in an enlisted capacity. However, present regulations do not insure that drafted pharmacists will be assigned to the Medical Department of the Army, although it is anticipated that the Army will make some provision to so assign pharmacists, regardless of commissoned or enlisted status, as is the practice in the Navy. If it becomes general that pharmacists are not assigned to the Medical Department we should take the matter up with the Department of the Army.

D. *The Navy*

Commander W. Paul Briggs reported on the progress of pharmacy in the Medical Service Corps of the Navy. The present numerical strength of the pharmacy section is far below its authorized strength, but it is anticipated that personnel requirements will be met by July 1950. There are vacancies in this service for competent pharmacists who are interested in a Navy career. The Reserve Corps with 480 authorized spaces also has

vacancies, although these are gradually being filled. Approximately 150 pharmacists have accepted reserve commissions and the deans of the various colleges have been advised of these vacancies and have been requested to encourag their best graduates to apply for both regular and reserve commissions.

There are a number of pharmacists who are still commissioned in line units of the Naval Reserve, who are eligible for transfer to the Medical Service Corps. Commander Briggs urged that those who are eligible apply for such transfer by letter request for reclassification as a Medical Service Corps reserve officer to the Chief of Naval Personnel thru the Commandant of their own Naval District. Included should be such data as rank, service number, nature and degree of present activity in pharmacy, and other facts which may be pertinent. One essential requirement is that the applicant be actively engaged in one of the many phases of this profession such as teaching, retail pharmacy, research, medical representative, etc., and he must have the minimum educational requirement of a B.S. degree from an accredited school of pharmacy.

It was also pointed out that civilian pharmacists meeting the minimum educational requirement, even though they have had no military experience, may apply for commissions in the regular Navy if between the ages of 21 and 32 years, and for commissions in the Naval Reserve if between the ages of 21 and 48 years. All applications for commissions, or information, should be addressed to an office of Naval officer procurement. Such offices are located in most of the larger cities throughout the United States and any Naval recruiting station will supply the address to interested pharmacists.

E. *The Public Health Service*

Commander George Archambault, Chief Pharmacist, reviewed the general progress of pharmacy in this branch of the service. It was disclosed that Commander Archambault and Dr. Fischelis

who holds an inactive reserve commission in this branch, attended a course in the Medical Aspects of Nuclear Energy, with a view to determining its suitability for presentation by instructors of biochemistry and pharmacology in colleges of pharmacy, and its adaptablity for all pharmacists, should the need for such comprehensive coverage arise.

There are 75 pharmacists in the Public Health Service at this time. Of this number 31 are commissioned officers and 44 are Civil Service civilian employees. As a result of the last examination for regular commissions 580 inquiries were received, 114 applicants were examined, and 13 qualified. Of the 13 who passed 4 qualified at the grade of captain, 3 at the grade of 1st lieutenant, and 6 at the grade of 2nd lieutenant. Another examination for the regular service is scheduled for March 1950 and we were requested to assist in publicizing this fact. Another point which was stressed is that a limited number of appointments in the reserve are being offered to graduates of the 1946, 47, 48 and 49 classes of approved colleges of pharmacy. General qualifications for such appointment are that the candidate be a citizen of the United States, meet the physical standards, and possess the minimum educational requirements. Successful candidates will be commissioned in the Reserve Corps at a rank equivalent to ensign or second lieutenant, and if interested in a career in professional pharmacy in the United States Public Health Service, will be eligible to take the national competitive examination for admission into the regular corps, when it is held in 1950. The pay of an ensign with a legal dependent is, at the present time $3,391 per annum, but pending legislation, if enacted by Congress, will increase present rates substantially.

Pharmacists in the service are assigned as hospital pharmacists, or to foreign quarantine inspection duties. It is a service in which the pharmacist is utilized to 100 per cent of his professional capacity. A program is now being developed by the United States Public Health Service which provides that pharmacy officers will attend colleges for further training leading to higher academic degrees, since it has become almost universally

recognized that to attain the optimum in the field of medical care, not only must minimum educational requirements for specialists in this field be set at a level comparable to the degree of responsibility inherent in such work, but supplemental study is required from time to time to insure knowledge and utilizaton of new developments within the various fields of specialty, and to maintain a high level of excellence in the services rendered. Present plans are that two pharmacy officers will begin such advanced training this fall. Those selected will be carefully screened to insure that potential abilities are developed in those fields which will cover future staffing requirements of the service. It is anticipated that the peace-time strength of the pharmacists in this agency will be 100.

An indoctrination plan is now in operation which provides that newly assigned officers receive from four to eight weeks of orientation prior to working independently, and in some states a tie-in with the college of pharmacy of the state university and the university hospital has been inaugurated with splendid success. During the past year the United States Public Health Service and the state university school of pharmacy developed and instituted at one of the larger hospitals, a hospital pharmacy course for senior students, wherein the students electing to take the course receive actual practice in hospital pharmacy operation.

This service is a part of the armed forces in times of national emergency. Its officers hold commissions and receive pay equivalent to officers of the Army and Navy, and service performed in either of those branches of service is creditable toward promotion and retirement in the United States Public Health Service. Its physicans are assigned to the United States Coast Guard, and Coast Guard personnel are hospitalized in Public Health Marine Hospitals.

Pharmacists interested in participating in the service rendered by this agency are urged to address requests for further information to the Surgeon General, United States Public Health Service, Washington 25, D. C., attention of George F. Archam-

bault, Senior Pharmacist, Chief, Pharmacy Section, Division of Hospitals.

F. *The Veterans Administration*

Mr. E. Burns Geiger, Chief Pharmacist of the Veterans Administration reported satisfactory progress in the agency during the past year. The work of pharmacy is expanding, due to the establishment of additional pharmacy installations throughout the country and the enlargement of those already established. A degree of B.S. in pharmacy as a requisite for appointment to the service has again been confirmed. Much pressure was brooght to bear during the year in an effort to lower this requirement, particularly for veterans. Mr. Geiger is to be complimented for the very able manner in which he defended and strengthened the position taken by this committee, when the matter was reviewed by it, together with a committee representing the Association of Hospital Pharmacists.

There are a few pharmacists in the Veterans Administration in grade P-1, who are either War Service (Indefinite) or temporary appointees, i.e., non-status employees, and therefore are not eligible for promotion. However, it is anticipated that all pharmacists with this agency will, in the very near future, be in grade P-2 or higher. At this time, annual salaries for civilian employees in professional grades are as follows:

Grade	Minimum Rate	Maximum Rate
P-1	$2,974.80	$3,727.20
P-2	3,727.20	4,479.60
P-3	4,479.60	5,232.00
P-4	5,232.00	6,235.20

The salaries listed are for a basic forty hour work week. Civil Service employees are compensated in cash for overtime in excess of the basic forty hours and in addition earn 26 days of annual leave each year and are allowed an additional fifteen days sick leave. Additional benefits extended to such personnel include periodic within-grade pay increases, and retirement benefits which

increase the benefits of this type of service. Any increase in Civil Service salaries is contingent upon Congressional action, and although several bills have been introduced in committee which would increase the present authorized rates the possibilities of enactment are not favorable.

The report that has come to the attention of this committee, to the effect that some of the VA installations were dispensing drugs wihout a pharmacist, was discussed with Mr. Geiger. He advised that all of the supervisory aspects of the pharmacy program have recently been centralized in Washington and that, in the future, field units will not be established unless it is determined after review by the central headquarters that such action is essential. Thus, all pharmaceutical units in the entire country will be under his direct supervision and this situation will no longer obtain.

Personal visits have, from time to time, disclosed that VA pharmacy installations are usually well conducted and that the pharmacist is an important member of the Therapeutic Board of the Veterans Administration Facility who collaborates with the doctors in determining what medicine and drugs are to be made available. The professional level of the pharmacists in VA seems to be rising to a satisfactory level. The degree of responsibility which is delegated is dependent largely upon the initiative, the ability, and the educatonal background of the particular pharmacist assigned.

Mr. Archie E. Millis has recently been appointed Assistant Chief of the Pharmacy Division, under Mr. Geiger. Mr. Millis was graduated in 1936 from the University of North Carolina and has a B. S. degree. Prior to joining the staff of the Veterans Administration he was a member of the staff of the Duke University Hospital in Durham, N. C. During World War II he served as a pharmacy officer and medical supply officer at a general hospital and holds the rank of major in the Army Reserve Corps.

We can be assured that the level of pharmacy in the Veterans Administration will continue to rise under the capable direction of these two leaders.

G. *Recommendations*

A summarization of the preceding material reveals certain salient facts in connection with the advancement of pharmacy in government service.

The Army is proceeding slowly. While the present number of pharmacists exceeds the original Pharmacy Corps quota of 72, there are too many non-pharmcists in the Pharmacy Administration and Supply Section of the Medical Service Corps. Since this situation has resulted from the necessity to provide places for those war-time officers who were integrated into the regular Army, little can be done at this time to correct the situation. But it will be our continuing responsibility to insure that an adequate share of the vacancies which occur due to expansion or retirement, are filled by qualified pharmacists. The Corps was planned to provide a place for every pharmacist qualified for military service during periods of national emergency. To insure that the intent and objective of that plan is carried out in the event of such an emergency we must get as many pharmacists into key positions as is authorized and proper.

Colleges should mintain an active interest in the military program and encourage their gradutes to apply for reserve and regular Army commissions as the opportunity arises. It would be well not to lose sight of the fact that there are many assignments in the Medical Service Corps that can be filled by qualified personnel other than pharmacists. However, the more pharamacists that are placed in these positions the better able we will be to prove our contention that the pharmacist is the best material for such assignments.

The same may be said of the Navy. If the ROTC program can not be expanded at this time, it should not be the only source which provides officers for the regular Army. Some plan should be adopted for providing an opportunity for outstanding graduates of those colleges of pharmacy which are without ROTC units, to qualify for regular Army commissions.

While the situation is not critical at this time, our sights should be fixed on this objective—to insure that action is taken to wipe out the present 2 per cent limitation of colonels in the Medical Service Corps of the Army, and its Navy equivalent.

Some support should also be given to the Hook report which recommended increases in military service pay and allowances. Our legislative committee should support bills based upon these recommendations when they are ready for congressional action, since they will affect the pay of uniformed personnel of the Army, Navy, Air Force, and U. S. Public Health Service and will equally benefit our pharmacy officers in these services. Further, such action might encourage other qualified pharmacists to consider a career in these services.

We must keep informed of the Selective Service program and insure that when pharmacists are inducted into the Army under its authority they are assigned to the Medical Department and that they are given every opportunity to qualify as officers if they have the capacity, the ability, and the educational requirements. A constant survey of this situation should be conducted.

One thing which may retard our progress in the Army is that DA Circular 210, issued in 1948 was not revised as was expected. It presently provides that a civilian pharmacist holding a reserve commission in the Medical Service Corps may make application for the regular Army, and further provides that he must be on active duty for one year before such application can be approved. It is the intention of the Department of the Army to restrict the acceptance of such applications to those submitted by ROTC graduates who have MSC reserve commissions. It is the

considered opinion of this committee that civilian pharmacists holding reserve commissions as of this time, or at any future time, should not be excluded unless, and until, the ROTC program is substantially expanded. Our objections to this procedure should be registered with the Department of the Army.

The small balance of committee funds in the hands of our competent treasurer Dr. Swain, has been adequate to carry us through the year and it has been unnecessary to request additional money from the supporting associations. Since a situation might arise, however, that would make it necessary to call the entire committee membership to Washington, in which event supplemental funds would be required, it would be desirable to have the sponsoring associations set aside funds in their budgets which the treasurer could draw upon in such a contingency.

While our gains have been many, there is still much work to be done, and it is important that the efforts of the committee and its contracts maintained, lest through discontinuance we lose what we have strived so hard to gain, to the ultimate detriment of the entire profession of pharmacy.

Grateful appreciation is extended by me personally, and on behalf of the entire committee membership to Congressman Carl T. Durham for his continued interest and assistance in our problems; to George Frates and Dr. Fischelis for their watchful and aggressive interest in the work of this committee; to Colonel Goriup, Commander Briggs and Archambault, and E. Burns Geiger, for their unfailing interest and courtesy and leadership in their respective areas of responsibility; to Deans Rogers, Christensen, Daniels, and Uhl for the care and patience they exercised in making the initial ROTC units work and their trouble and efforts to keep us advised of the progress being made.

I wish to express my personal appreciation to the members of the committee, without whose invaluable advice and information our objectives could not have been accomplished. We have had

a good year, a portion of which has been spent in seeing the results of our labors bring forth good fruit.

ARTHUR H. EINBECK, *Chairman*

Report of the Committee on Education and Membership Standards

This year in preparation for the report of our Committee we sent a questionnaire to each of the deans of the sixty-five accredited schools of pharmacy requesting factual information and judgments with respect to problems and issues which we considered pertinent to our work. The Committee wishes to express particular appreciation to the deans for their prompt and cooperative response to our request. Fifty-five questionnaires were returned, which represents eighty-five per cent of our member schools.

Requirements for Admission to Schools of Pharmacy

In December 1946 the American Council on Pharmaceutical Education requested that the Executive Committee of the A.A.C.P. suggest requirements for admission to our colleges of pharmacy. The Executive Committee, in turn, relayed this request to the Committee on Educational and Membership Standards. Two years ago at the Milwaukee meeting we made a preliminary report in which we proposed the following requirements:

> **The applicant must be sixteen years of age; must be a graduate of an accredited secondary school; and must have earned not less than 15 units of high school credits. These must include 3 units in English, 2 in history or social studies, 2 in mathematics and 1 in science.**

In addition to this minimum we recommended as highly desirable additional units in English, scence, mathematcs, foreign language, and history or social studies.

In our recent questionnaire we asked the school deans the following question: "At the present stage in the development of pharmaceutical education, in your judgment, is it desirable that certain additional prerequisite courses as recommended (in our report) be required of students entering your college of pharmacy?" Twenty-one schools advocate additional requirements, twenty-eight oppose additional requirements. Pursuant to the latter group it should be explained that their opposition is not directed against better equipped applicants but rather is due to local situations such as requirements by state departments of education or local universities' policies applying to all entering freshmen.

Most applicants already present four units in English. Many schools consider additional units in science and mathematics essential and, accordingly, are now requiring them. One school requires physics, some require chemistry, several require at least two laboratory sciences, some require three units of mathematics and others will not accept units in vocational subjects.

In view of the wide diversity of secondary education in the country as a whole, the Committee believes that it is not desirable, at this time, to increase the number of minimum units. However, we would encourage individual schools to increase requirements in science, in mathematics, and in other areas where local situations make such action feasible.

We would call your attention to the fact that there is a surprisingly small number of specified subjects required for admission to medical schools in America. However, individual medical schools may add specific subjects as they deem wise.

As in medicine, so in pharmacy there is a growing emphasis upon the selection of superior applicants without blue-printing in too great detail the content of their preparation.

The Use of Intelligence, Aptitude, and Achievement Tests

The questionnaire submitted the following query: "Are you now utilizing recognized intelligence, aptitude, or other tests such as the National College Board Examination?" Since this question should have been worded so as to distinguish between tests used as a basis for admission and those used in guidance, the replies indicate great interest in this area. Thirty-one schools are using intelligence tests. Twenty-six report the use of aptitude and guidance tests. English and mathematics placement tests are being used in many schools. As a basis for selecting applicants for admission several schools are giving a battery of tests including ability in reading comprehension, in mathematcs, in chemistry, and in other fields. The colleges of pharmacy are actively participating in the various phases of modern testing.

As the field of predictive testing is of particular interest and is the scene of much current activity, the questionnaire included: "Do you believe that the study of pharmacy differs so materially from that of other professional descipline that it requires a special predictive test applicable only to pharmacy?" Thirty-seven schools replied in the negative, eight in the affirmative, and the others were "not sure." In their answers the majority of deans were in accord with the findings of many able psychologists. Perhaps, however, we should postpone final judgment until the special "Committee on Predictive and Achievement Tests" has had opportunity for further study of this problem.

The Classification and Accreditation of Pharmacy Schools

Last August, at the San Francisco meeting of the A.A.C.P., the recommendations of The Pharmaceutical Survey with respect to clasification and accreditation standards were of intense interest. Accordingly, we posed the following in our questionnaire: "Do you favor the proposals of The Pharmaceutical Survey regarding the classification and accreditation of colleges as proposed on page 21 in "Findings and Recommendations," i.e., that they be classified as A, B, C, and Y?" Twenty-five deans said no,

twenty-five said yes, with the others uncertain. The following excerpts from answers to this query indicate the varied viewpoints:

"This system of classification passed out years ago."
"Medical schools tried it and it was an utter failure."
"I fear the larger scchools . . . will get the higher ratings because of more money in their budgets."
"A school that ought not to be accredited might easily gain a 'C' accreditation and therefore have the legal advantages of an accredited school."
"We believe that the present system of either acceptance or non-acceptance should be continued."
"Probation or accreditment is the answer."
"We are changing too fast for a classification using A, B, C, etc. Let things stabilize before adopting the above."
"It would seem to me that classifying any college as class B would not be to the best interest of the college or school in question insofar as the public is concerned."
"Despite survey advocacy of proposal can see no advantage over former procedure, viz,, accredited, tentative, non-accredited. Tentative serves all purposes proposed by classes B and C."
"Why have second class schools?"
"Where there are too many colleges in an area consolidation should be forcefully recommended."
"Inspection team should have at least one member that should be present for all inspections."
"We are in favor of The Survey's recommendation that accredited colleges be classified as A, B, C, and Y since this would give a prospective student a truer picture of the quality of instruction that he would get. Under the present system, every accredited college would appear to be on a par."
"Colleges should all be class A and if not they should be given a reasonable period of time to correct deficiencies or close up."
"Yes (but) after more than five years of activity on the part of the A.C.P.E., a school should either be accredited or not accredited."
"Principle is wrong but I believe such classification is necessary, all influencing factors being considered."
"The A.C.P.E. visualizes only 'A' colleges of pharmacy, once its accreditation prpogram becomes in full force and effect."

In 1940 the inspection of colleges of pharmacy was discontinued because of the war. It is readily understandable that now our schools are vitally concerned about the plans for the forth-

coming inspections. It would seem that we should view the proposals of The Survey and the current plans of the A.C.P.E. for accreditation and classification as a temporary expedient and not as a permanent pattern of procedure. It is confidently hoped that the inspections to be carried out under the direction of the Council, shall operate in a way to serve the best interests of pharmaceutical education and the welfare of the American public.

The Role of the Committee on Educational and Membership Standards

Your Committee sometimes wonders just what is the logical province for its efforts. With the establishment of the American Council on Pharmaceutical Education the A.A.C.P. relinquished its accrediting function to the Council. It would seem, therefore, that any college or school that is accredited in whole or in part by the A.C.P.E. should thereby be eligible for membership in the A.A.C.P.

Possibly the label of our Committee should be altered to signify its function as a sounding board for consideration of educational issues of current concern. In view of the role of the Council and of the many A.A.C.P. committees it may be that there is no longer a functional need for a committee such as ours.

ARTHUR E. JAMES, *Chairman*

Report of the Committee on Activities for Alumni

A questionnaire was sent to the dean of each member college for the purpose of obtaining data on three major points:

a. **Seminar Program**
b. **Alumni Mailing Lists**
c. **Publications or Newsletters sent to Alumni**

Using the data received, the Committee prepared and sent to each member college an Information Bulletin on Seminars describing the activity of each college in this direction. A copy of this Bulletin is submitted with this report.

There seems to be a decided increase in the number of such programs arranged by the member colleges. This is indeed commendable. Pharmaceutical educators have become increasingly aware of their obligations to pharmacists as well as to students and consider it a part of the educational program of pharmacy to provide some sort of in service training or extension work.

From the replies received, a number of problems are faced by those attempting to arrange seminar programs in certain areas. In some of the large states it is difficult, if not impossible, for pharmacists to travel the great distance to the college. Some colleges have solved this problem by arranging sectional meetings held in different parts of the state rather than at one place. Other colleges have experienced great difficulty in arousing interest in seminar programs. The solution to this problem seems to lie in the nature of the program offered and also in gaining the endorsement and support for the program by local pharmaceutical organizations. Some of the most successful seminars are sponsored jointly by a college and a county, regional, or state organization.

The Committee finds a definite increase in the number of seminars being held as compared with the number determined in 1948 by The Pharmaceutical Survey Committee. It is, however, not as extensive a program as that found desirable by The Survey and made a part of its recommendations. The implementation of The Survey's recommendations in this direction will be a difficult undertaking for it involves considerable time and expense to set up in each college a "division of pharmaceutical extension" under "competent professional direction." That this objective is

the ideal is not debatable and everything possible should be done to establish such a program in every college where it is feasible. In the meantime, seminar programs, with all their limitations, are believed by the Committee to deserve continued attention and support by member colleges and every college not having such a program should consider its early adoption.

From the results obtained on the questionnaire distributed it is evident that most, but not all, colleges make some effort to maintain a mailing list of their graduates. It would appear, however, that some serious weaknesses exist in this activity. It must be recognzed that the maintenance of an up-to-date, accurate mailing list is difficult, time consuming and endless task. Many schools of pharmacy keep no separate list and their graduates are listed among those of the entire university. This often has definite disadvantages where intimate contact with the pharmacy graduates is desired by the school of pharmacy. Alumni activities, seminars and other alumni relations cannot be developed successfully without recourse to a mailing list that lends itself to direct use by the college. Every effort should be made by the colleges to improve their mailing list of graduates where improvement is indicated.

Publications sent to alumni are quite varied. Some colleges have an alumni bulletin or newsletter sent periodically to each alumnus. This would seem to be the ideal program. Many schools, a part of a university system, contact their alumni through a section of the university's publication. Still others send their alumni the student undergraduate publication or the A.Ph.A. Student Branch publication. Many state and local pharmaceutical journals have a section devoted to the college or colleges serving that respective area.

All of these activities are very worthwhile and the maintenance of alumni interest by such publications results in benefit to both the college and its alumni.

In summary, it appears that the colleges are giving increasing attention to their alumni and that this interest is bringing to the colleges greater esteem and regard.

L. F. Tice, *Chairman*

Report of the Committee on Pharmaceutical Research

The program of the Committee on Pharmaceutical Research with reference to topic assignments has not been perpetuated. It was found that the success of the program was questionable since little cooperation had been achieved among the suggested participating groups. The committee in its previous reports has indicated the difficulties which they encountered in carrying out certan objectives. These statements do not imply that faculty members are not performing in the area of research but suggest that it has been and will continue to be a difficult task to gather problems from industry, the government, the revision committees and from other sources and to assign these problems to a receptive worker. An energetic research worker will always have problems in his own mind that will fall into a pattern of activity which can be accomplished with the facilities he has at his disposal.

The Committee in its current activity has completed a survey of our colleges with reference to the extent to which various government agency funds are now in use in the area of pharmaceutical research. The Committee members performed their task by contacting the deans or directors of the member colleges with a mail questionnaire. This survey seemed to be important for various reasons. During the past several years there has been a change in the origin of funds supporting scientific research in our universities. It was not long ago that the major support through funds for research in academic institutions was provided by private foundations and was followed in order of support through contract research and grants in aid from industry and the smaller amount of support was provided by federal and state funds. Today the largest amount is supplied by government funds and is followed by the private foundations and the smallest contribution is by industry.

The data that was accumulated indicates that five member colleges are making use of funds provided by various govern-

mental agencies to the extent of twelve research projects. Certain other schools indicated that application for such support had been made and two institutions are recipients of grants in aid from state agencies. These data indicated that our colleges of pharmacy are not in line with other areas of academic research in their source of support. It can be explained in part by the fact that industry and private foundation funds are lending adequate support in the field of pharmacy. It is quite probable that the ready availability of funds from the American Foundation for Pharmaceutical Education has contributed to this situation.

Is it possible that our institutions offering graduate work or institutions where staff members are given time for research apart from teaching duties are overlooking available support? The very nature of the liberal attitude of various contracts suggests that this might be the case. Such research funds are currently administered by the following agencies: the Agricultural Research Administration, the United States Public Health Service, the Office of Naval Research, the Research and Development Branch of the Army, the National Research Council and the Atomic Energy Commission. The major objectives of nearly all of these groups are (1) to expand research activities, (2) to stimulate and initiate research where programs have been limited or non-existant, (3) to encourage research in neglected areas, and (4) to provide training. Restrictive regulations are negligible and there is no limitation on the size of the grant or the number of grants to any one institution or any one man.

This report would not be compete without again, as in the past, suggesting that college of pharmacy administrators place a greater emphasis upon the development of research programs among their staff members.

ARTHUR E. SCHWARTING, *Chairman*

Information Bulletin on Seminars or Refresher Courses in Member Colleges*

It is the purpose of this bulletin to bring to the attention of each member of the Association all of the available data on seminar or refresher programs in pharmacy recently held or to be held throughout the United States. This information has been collected by the Committee on Activities for Alumni of the A. A. C. P. In addition, certain other data have been obtained which will be incorporated in the Committee's Annual Report. It is hoped that this bulletin will prove useful to those who are planning seminars or who may be considering the adoption of such a program in their respective areas as a service to their alumni and other pharmacists.

A number of colleges have held seminars or have made definite plans for such a program in the next few months. These are as follows:

1. *University of California, College of Pharmacy*

The last seminar was held in 1942. One is planned for August, this year, under the auspices of the University Extension. About 50-60 pharmacists are expected to enroll for this work

2. *University of Connecticut, College of Pharmacy*

This institution has had marked success in its seminar programs which have been held for several years. The work is sponsored jointly by the College of Pharmacy and the Connecticut Pharmaceutical Association. The 1948 program follows:

Incompatibilities and Their Correction in Prescriptions
Basic Facts Underlying the Study of Ophthalmology
Adjustment of Osmotic Pressure in Collyria and Nasal Solutions
Adjustment of pH in Collyria and Nasal Solutions
Respiratory System Disorders

*The data in this Bulletin was collected and compiled by the Committee on Activities for Alumni and should be considered a part of that committee's report.

Notes in Regard to Connecticut Druggists
Insulin and the Pharmacist
Physiology and Pharmacology of the Gastro-Intestinal Tract
Prescription Pricing

These lectures were given evenings once a week. A new series are now in progress and are well received.

3. *University of Iowa, College of Pharmacy*

District meetings are held in each of five districts with the Iowa Pharmaceutical Association during the fall. Each meeting occupies a day and an evening.

4. *Massachusetts College of Pharmacy*

Regional meetings are held for the pharmacists of southeastern Massachusetts and a three-day refresher course in May. Last year's program, attended by about 300 pharmacists, was as follows:

Antihistaminics by William E. Hassan, Jr.
Pharmaceutical Applications of pH by Christopher H. Costello
Prescription Clinic by Mitchell J. Stoklosa
Methadon by Robert Henry Aldrich
Pharmacy in the Near East by Joseph D. Matthes
Drug Store Management: Incentive Pay by Paul C. Olsen
Fact or Fancy in the Treatment of Diseases of the Blood by William C. Murphy
Specialized Pharmaceutical Services by Philip J. McAuliffe

5. *University of Minnesota, College of Pharmacy*

This institution recently conducted its twelfth continuation study course in pharmacy. A three-day seminar was held February 14, 15 and 16, 1949. The complete program follows:

MONDAY, FEBRUARY 14

Registration
Introduction by Norman W. Johnson
Modern Trends in Internal Medicine by George N. Aagaard
Projects of the Division of Public Health Education of the Minnesota Department of Health by William Griffiths

Activities of the Medical Laboratories of the Minnesota Department of Health by Paul W. Kabler
Antihistamines in Allergy by Floyd J. LeBlanc
Motion pictures:
"A Pharmacologic Study of Metrazol" (By courtesy of the Bilhuber-Koll Corporation)
"The Physiology of Normal Menstruation" (By courtesy of the Schering Corporation)
Antacids by Taito O. Soine

TUESDAY, FEBRUARY 15

Findings and Recommendations of The Pharmaceutical Survey Relative to Curricula by Charles H. Rogers
New Veterinary Biological Preparations by Willard L. Boyd
Fair Trade, a Challenge to our Economic Security by Robert L. Swain
Pharmaceutical Manufacturing in a Drug Store by H. George DeKay
Motion picture: "Goodbye Weeds and Doomsday for Pests" (Visual Education Service, University of Minnesota)
The Pharmaceutical Use of Parahydroxybenzoates as Preservatives by Charles V. Netz
Some Developments in Thiobarbiturate Synthesis by Robert F. Doerge
A Preliminary Phytochemical Study of Lithospermum Ruderale by John W. Kleber
Dinner, open meeting and forum of the Northwestern Branch of the American Pharmaceutical Association. Forum Topic: "The Detailing Function of the Pharmacist."

WEDNESDAY, FEBRUARY 16

The Salt and Water Balance in the Body by Barnet Berris
Fluorides in Dental Caries by David F. Mitchell
New Antibiotics by Frank E. DiGangi
Some Important Veterinary Pharmaceutical Preparations by Willard J. Hadley
The Employment of Propyleene Glycol in Pharmaceutical Preparations and in Prescription Compouding by Rugnar Almin
Pharmacy in the Army by Leonard P. Zagelow
Motion pictures: "Scrub Game" and "Marks of Merit" (Visual Education Service, University of Minnesota)
Awarding of certificates by Julius M. Nolte and Chrales H. Rogers
Building Pharmaceutical Security by Robert L. Swain

6. *Creighton University, College of Pharmacy, Omaha, Nebraska*

A one-day meeting is held as a part of the annual "Homecoming Day" for the Alumni.

7. *Rutgers University, College of Pharmacy*

This institution in cooperation with the Northern New Jersey Branch of the A. Ph. A. has arranged a series of very successful seminar programs over the past several years. This year the program was given during the month of March on four successive Wednesday evenings. The title of the series was "Merits of Modern Drugs" and the following lectures were given:

Research, National Dairy Research Labs., Inc., Oakdale, Long Island

Control of Bleeding by Dr. Harvey H. Haag, Dean; School of Medicine, Medical College of Virginia

Control of Hypertension by Dr. John C. Krantz, Professor of Pharmacology, School of Medicine, University of Maryland

Sources of Information by Dr. R. A. Deno, Chairman of the Department and Professor of Biological Sciences, Rutgers University College of Pharmacy

8. *University of Buffalo, School of Pharmacy*

As a joint effort with its Alumni Association this institution holds a "Spring Clinic." Last year's program, given in April, follows:

Address of Welcome by Dean A. B. Lemon

Personality as Related to Success (A Panel Discussion) Frank T. Reddy, President of the Alumni Association, presiding.

a. "Telephone Courtesy" By Mrs. Margaret Acksel, (Supplemented by a sound movie showing the importance of a pleasing telephone personality—New York Telephone Company)

b. "The Relationship of Personality to Successful Selling" by Ralph Myrick, Sales Director, Bacon and Vincent Company

c. "What can Be Done to Improve Sales Personality" by Miss Marian Ketzel, Training Director, Adam, Meldrum and Anderson Company

Pharmacy's Professional Responsibilities—An address by A. R. Granito, Ph. G., F.A.C.A. Hackensack, N. J.

Significance of Business Machines in Modern Management (A sound movie—National Cash Register Company)
Prescription Clinic by E. L. Cataline, Ph.D., Assistant Professor of Pharmacy, University of Michigan
Latest Developments in the Prevention and Treatment of Communicable Diseases by C. H. Mann, M.D., D.P.H., Medical Director—E. R. Squibb & Sons
Alumni Dinner
Our Medical and Economic Interests in the Near East by Robert C. Page, Ph.G., '28, M.D., F.A.C.P., Medical Director—Texas Oil Company.

9. *University of North Carolina, School of Pharmacy*

A refresher course is planned again for spring or summer this year. The last program given November 11-13, 1947 in conjunction with the school's Fiftieth Anniversary follows:

Physiological Adaptation by Dr. Fred Semeniuk
The Importance of Research in Pharmacy by Dean M. L. Jacobs
Some Practical Manufacturing Formulas for Retail Druggists by Dr. E. A. Brecht
The Role of the Pharmacist in Psychosomatic Medicine by H. C. McAllister
Veterans Administration Pharmacy Service by W. J. Smith
Recent Developments in Allergies by Dr. Fred Semeniuk
New Drugs in the N.F. VIII by Dr. E. A. Brecht
What's New in the U.S.P. XIII by Dean M. L. Jacobs
Promotional Opportunity in the Prescription Department by W. J. Smith
Prescription Pricing by Dr. Herman O. Thompson
The Pharmacist and Public Health by Dr. W. P. Richardson

10. *Ohio Northern University, College of Pharmacy*

This college plans to give a one-day program in conjunction with the Northwestern District of the Ohio State Pharmaceutical Association the last Thursday in April.

11. *Ohio State University, College of Pharmacy*

A program has been arranged for May 12-14, 1949. The following topics are to be on the agenda:

Veterinary Medicines in the Drug Store
Insecticides, Rodenticides, Fungicides and Weedicides
From the Pharmacy Research Laboratory to the Drug Store
The Drug Store and Modern Economics

12. *Western Reserve University, School of Pharmacy*

A two-day Institute was held February 10th and 11th. The program was as follows:

Panel Discussion of "The Pharmaceutical Survey"
Participants: Dr. Robert L. Swain, Moderator

Dr. George D. Beal	**Dr. Ernest Little**
Dr. W. Arthur Purdum	**Dr. Carson P. Frailey**
Dr. Frank W. Moudry	**Mr. Thomas G. Crawford**
Mr. Mearl D. Pritchard	**Mr. M. N. Ford**

Dr. E. L. Newcomb

The Results of the American Druggist survey of the opinion of retail druggists on the Ewing plan for medical care, discussed by Editor John W. McPherrin.

Increased Efficiency and Economy in the Hospital Pharmacy by Dr. W. Arthur Purdum

Rubber Sundries by W. E. Powell and C. H. Caldwell

Official and Non-Official Vehicles, Colors and Flavors by Dr. P. F. Smith and J. T. Matousek

The last session of this meeting was held jointly with the Northern Ohio Branch of the American Pharmaceutical Association. This organization and others in the Greater Cleveland area sponsored the Institute together with the Western Reserve University School of Pharmacy and its Alumni Association.

13. *Oregon State College, School of Pharmacy*

A seminar was held in April 1948 and a program has been arranged for the near future to be given during a two-day meeting.

14. *University of Pittsburgh, School of Pharmacy and Duquesne University, School of Pharmacy*

These institutions, in cooperation with the Pittsburgh Branch of the A. Ph. A., held a seminar on four evenings during February and have planned an all day meeting for April.

15. *Philadelphia College of Pharmacy and Science*

A three-day seminar has been announced for July 12-14 this year. The program will be devoted to modern pharmaceutical practice and a review of current economic problems.

16. *South Dakota State College, Division of Pharmacy*

A three-day program was held April 5-7, 1948 and a program is to be held April 4-6, 1949. The 1948 program follows:

APRIL 5

Registration
Welcome by Dr. Fred H. Leinbach, President, South Dakota State College
Welcome by Dr. Richard Kendall, President, South Dakota Pharmaceutical Association
Opening Remarks by Floyd J. LeBlanc, Dean, Division of Pharmacy
Diseases of Poultry by Dr. G. S. Harshfield, Professor of Veterinary Science
Hormones by Clark T. Eidsmoe, Professor of Pharmacy
Antibiotics by Warren A. Berg, Instructor in Pharmacy
Films:
"Can You Fill This Prescription" and "Departmentizing for Profit" by Helmer E. Nelson, National Cash Register Company

APRIL 6

Newer Therapeutic Agents by Mildred Jarratt, Instructor in Pharmacognosy
The Use of Sulfonamides in Veterinary Practice by Dr. Mark Welsh, Director, Animal Industry Section, Lederle Laboratories Division
Insulin by Guilford C. Gross, Associate Professor in Pharmacology
Panel Discussion—Veterinary Biologicals by Dr. Harshfield, Dr. Taylor and Dr. Welsh
Films:
"Antu—Modern Pied Piper" and "The Story of Phenothiazine" E. I. DuPont de Nemours & Company
Banquet—"Forty-five minutes with the Magic Spirits" by Dr. Ward Miller

APRIL 7

Barbiturate Law: New Regulations on Practical Experience by Bliss Wilson, Secretary, South Dakota Pharmaceutical Association

New Insecticides by George I. Gilbertson, Director, Extension Service

Narcotic Regulations by Willis P. Blackwell, Instructor in Pharmacy

Film:

"Immunization Against Infectiouns Diseases" Lederle Laboratories

Summation and Discussion by Floyd J. LeBlanc, Dean

17. *University of Washington, School of Pharmacy*

A program is being planned to be given during a two-day meeting. The Division of Adult Education of the University is cooperating in arranging the seminar and also helping financially.

A number of institutions not listed above are making plans to institute, or re-institute, seminar programs but as yet no definite data are available. This list includes the following:

University of Georgia, School of Pharmacy
Purdue University, School of Pharmacy
Ferris Institute, College of Pharmacy
Montana State University, School of Pharmacy
North Dakota Agricultural College, School of Pharmacy
Cincinnati College of Pharmacy
University of Toledo, College of Pharmacy
Rhode Island College of Pharmacy and Allied Sciences
University of Texas, College of Pharmacy

Other details concerning seminar programs in the United States will be embodied in the Committee's Annual Report.

L. F. TICE, *Chairman*

Report of the Committee on Libraries*

In his inaugural address at San Francisco last August, President J. Lester Hayman said, "It is recommended that the Library Committee study the possibilities and the practicability of preparing an outline to include what may be considered the minimum requirements for a college of pharmacy library for possible adoption by the Association and for the possible use of the American Council of Pharmaceutical Education in the appraisal of the colleges for accreditation."

While it might be possible and also practicable to prepare a list that could be considered as a minimum requirement for pharmacy school libraries, the list herewith submitted is not intended to serve that purpose. A list designed to serve as a minimum requirement would need the combined wisdom of many more persons than comprise the library committee. If those whose task it is to inspect and accredit our schools have a real need for a minimum list, it should be prepared by a representative group of persons.

In this connection it should be borne in mind that those pharmacy school libraries which hold membership in the Medical Library Association will be inspected at some time in the future by that association.

In making up the present list, an attempt has been made to give essential information about each reference such as the author, title, date, and publisher. The titles have been arranged chronologically under each heading.

A list of this kind was prepared and distributed by this committee in 1940. An attempt has been made to have the 1949 list composed largely of books which have been published within the past 15 years. The older titles which have been retained are there because of their reference and historical value. The prepa-

*Prepared by A. N. Martin, Jr., George E. Osborne and C. O. Lee with the assistance of the members of the faculty of the Purdue University School of Pharmacy.

ration of a more extensive list of books of value to investigators and research workers is suggested for a later date. Periodicals are not included here because a more or less complete list of them is to be found in the American Journal of Pharmaceutical Education *7*: 187-242, 1943. A selected list of the more appropriate journals should be also composed.

Efforts have been made to minimize errors in making this list, but it is too much to expect that there are none. We would appreciate your corrections and suggestions.

C. O. Lee, *Chairman*

BIOLOGY

Bacteriology

Author	*Title*	*Publisher*
Anderson	An introduction to bacteriological chemistry. 1938	Wm. Wood Baltimore
Jordon & Burrows	Textbook of bacteriology. ed. 13, 1941	Saunders
Kolmer & Tuft	Clinical immunology, biotherapy, and chemotherapy in the diagnosis, prevention and treatment of disease. 1941	Saunders
Ratner	Allergy, anapholaxis, and immunotherapy. 1943	Williams & Wilkins
Schaub & Foley	Methods of diagnostic bacteriology. 1943	Mosby
Gerschenfeld	Bacteriology and allied subjects. 1945	Mack
Porter	Bacterial chemistry and physiology. 1946	Wiley
Boyd	Fundamentals of immunology. ed. 2, 1947	Interscience

Botany

Van Wijk	A dictionary of plant names. 2 v., 1911-16	Dutch Soc. Sci., Harlem
Britton & Brown	An illustrated flora of the northern United States, Canada and the British possessions. 3 vol., ed. 2, 1913	Scribner
Youngken	Laboratory manual of botany. 1929	Blakiston
Grieve	A modern herbal. 1931	Harcourt & Brace
Maximov	Plant physiology (trans. by Krassovsky), ed. 2, 1938	McGraw-Hill
Arber	Herbals, their origin and evolution. 1938	Univ. Press Cambridge
Youngken	A college textbook of pharmaceutical botany. ed. 6, 1938	Blakiston
Johansen	Plant microtechnique. ed. 1, 1940	McGraw-Hill
Reed	A short history of the plant sciences.	Chronica Botanica Waltham, Mass.
Smith, and others	A textbook of general botany. ed. 4, 1942	Macmillan

Physiology

Luck (editor)	Annual review of physiology. 10 v. 1939-48	Ann. Rev. Inc., Stanford, Calif.
Best & Taylor	The physiological basis of medical practice. ed. 4, 1945	Williams & Wilkins
Greisheimer	Physiology and anatomy. ed. 5, 1945	Lippincott
Gray	Anatomy, descriptive and applied (revised by Johnston & Whillis) ed. 29, 1946	Longmans, Green

Fulton (editor)	Howell's textbook of physiology. ed. 15, 1946	Saunders
Bergman & Hewitt	Laboratory manual for experimental physiology. 1947	Burgess

Zoology

Hegner	College zoology. ed. 5, 1942	Macmillan
Elliot	Atlas in general zoology. 1944	Burgess
Nauss	Medical parasitology and zoology. 1944	Hoeber, N. Y.
Grove & Newell	Animal biology. 1946	Univ. Tutorial Press, London

CHEMISTRY

Inorganic

General

Title	*Publisher*	*Author*
Timm	An introduction to chemistry. ed. 1, 1930	McGraw-Hill
Mellor	A comprehensive treatise on inorganic and theoretical chemistry. 1937	Longmans, Green
Brinkley	Principles of general chemistry. ed. 3, 1941	Macmillan
Sneed & Maynard	General inorganic chemistry. 1942	VanNostrand
Briscoe	College chemistry. 1945	Houghton Mifflin
Deming	Fundamental chemistry. ed. 2, 1947	Wiley
Hildebrand	Principles of chemistry. ed. 5, 1947	Macmillan
Pauling	General chemistry.1947	Freeman

Analytical

Mellan	Organic reagents in inorganic analysis. 1941	Blakiston
Gibb	Optical methods in chemical analysis. ed. 1, 1942	McGraw-Hill
Burk & Grummitt	Major instruments of science. 1945	Interscience
Snell & Snell	Colorimetric methods of analysis. 2 vol. 1937	VanNostrand
Kolthoff & Lingane	Polarography. 1941	Interscience
Brode	Chemical spectroscopy. ed. 2, 1943	Wiley
Zechmeister & Cholnoky	Principles and practice of chromatography. (trans. by Bacharach & Robinson) 1943	Chapman & Hall, Ltd.

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McAlpine & Soule	Prescott and Johnson's qualitative chemical analysis. 1933	VanNostrand
Middleton & Willard	Semi-micro qualitative analysis. 1939	Prentice-Hall
Curtman & Edmonds	Calculations of qualitative analysis. 1940	Macmillan
Hogness & Johnson	Qualitative analysis and chemical equilibrium. 1940	Holt
McAlpine & Soule	Fundamentals of qualitative chemical analysis. ed. 2, 1941	VanNostrand
Noyes & Swift	Qualitative chemical analysis. ed. 10, 1942	Macmillan
Treadwell & Hall	Analytical chemistry. vol. 1, ed. 10, 1942	Wiley
Heisig	Theory and practice of semimicro qualitative analysis. 1943	Holt
Engelder	Calculations of qualitative analysis. ed. 2, 1947	Wiley

Holmes	Qualitative analysis, a brief outline. ed. 9, 1945	Macmillan

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Hillebrand & Lundell	Applied inorganic analysis. 1929	Wiley
Mellon	Methods of quantitative chemical analysis. 1937	Macmillan
Fales & Kenny	Inorganic quantitative analysis. 1939	Appleton-Century
Treadwell & Hall	Analytical chemistry. vol. 2, ed. 10, 1940	Wiley
Willard & Furman	Elementary quantitative analysis. ed. 3, 1940	VanNostrand
Rieman, Neuss & Naiman	Quantitative analysis, a theoretical approach. ed. 2, 1942	McGraw-Hill
Arenson	How to solve problems in quantitative analysis. 1942	Crowell
Kolthoff & Sandell	Textbook of quantitative inorganic chemistry. 1943	Macmillan
Pierce & Haenisch	Quantitative analysis. ed. 2, 1946	Wiley
Hamilton & Simpson	Calculations of analytical chemistry.ed. 4, 1947	McGraw-Hill

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Whitmore	Organic compounds of mercury. 1921	Chemical Cat. Co.
Raiziss	Organic arsenical compounds. 1923	Chemical Cat. Co.
Allen	Commercial organic analysis. 10 vols., ed. 5, 1923-44	Blakiston
Armstrong	The glycosides. 1931	Longmans-Green
Morton	Laboratory technique in organic chemistry. 1938	McGraw-Hill
Sidgwick	The organic chemistry of nitrogen. 1937	Clarendon Press

Whitmore	Organic chemistry. 1937	VanNostrand
Fisher	Laboratory manual of organic chemistry. ed. 4, 1938	Wiley
Fieser	Experiments in organic chemistry. ed. 2, 1941	Heath
Gilman & Blatt	Organic syntheses, col. vol. 1, ed. 2, 1941	Wiley
Huntress & Mulliken	Identification of pure organic compounds. 1941	Wiley
Ray	Organic chemistry. 1941	Lippincott
Gilman	Organic chemistry. 2 vols., ed. 2, 1943	Wiley
Adams	Organic reactions. 4 vols., 1942-46	Wiley
Degering	An outline of nitrogen compounds. 1942	Swift
Catterman-Wieland	Laboratory methods of organic chemistry. 1943	Macmillan
Blatt	Organic syntheses. col. vol. 2. vols. 10-19. 1943	Wiley
Fuson & Snyder	Organic chemistry. 1944	Wiley
Fieser & Fieser	Organic chemistry. 1944	Heath
Suter	Organic chemistry of sulfur. 1944	Wiley
Conant	Chemistry of organic compounds. ed. 3, 1947	Macmillan
Wertheim	Textbook of organic chemistry. ed. 2, 1947	Blakiston
Karrer	Organic chemistry. ed. 3, 1947	Elsevier
Pigman & Goepp	Chemistry of the carbohydrates. 1948	Academic Press
Shriner & Fuson	Systematic identification of organic compounds. ed. 3, 1948	Wiley
Muldoon	Organic chemistry. ed. 3, 1948	Blakiston

Physical and Theoretical Chemistry

Lewis & Randall	Thermodynamics and the free energy of chemical substances. ed. 1, 1923	McGraw-Hill
Daniels	Mathematical preparation for physical chemistry. 1928	McGraw-Hill
Taylor (editor)	A treatise on physical chemistry. ed. 2, 1931	VanNostrand
Hassel	Crystal chemistry. (trans. by Evans) 1935	Heinemann, Ltd.
Schwab	Catalysis (trans. by Taylor & Spence) 1937	VanNostrand
Partington & Stratton	Intermediate chemical calculations. 1939	Macmillan
Hitchcock	Physical chemistry for students of biology and medicine (with lab. expts.) ed. 3, 1940	Thomas, Baltimore
Daniels, Mathews, & Williams	Experimental physical chemistry. ed. 3, 1941	McGraw-Hill
West	Physical chemistry for students of biochemistry and medicine. 1942	Macmillan
Hougen & Watson	Chemical process principles. 1943	Wiley
Bull	Physical biochemistry. 1943	Wiley
Pauling	The nature of the chemical bond. ed. 2, 1945	Cornell Univ.
Amsden	Physical chemistry for premedical students. ed. 1, 1946	McGraw-Hill
Glasstone	Textbook of physical chemistry. ed. 2, 1946	VanNostrand
Daniels	Outlines of physical chemistry. ed. 7, 1948	Wiley

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Hammett	Physical organic chemistry. ed. 1, 1940	McGraw-Hill

Branch & Calvin	The theory of organic chemistry. An advanced course. 1941	Prentice-Hall
Remick	Electronic interpretations of organic chemistry. 1945	Wiley
Wheland	The theory of resonance and its application to organic chemistry. 1944	Wiley
Weissburger (editor)	Physical methods of organic chemistry. 2 vol. 1945-46	Interscience

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Abramson	Electrokinetic phenomena and their application to biology and medicine. 1934	Chemical Cat. Co.
Creighton & Koehler	Principles and applications of electrochemistry. 2 vol., ed. 4, 1943	Wiley

Radioactivity

Pollard & Davidson	Applied nuclear physics. 1944	Wiley
Wilson, Nier & Reimann	Preparation and measurement of isotopic tracers. 1946	Edwards Bros., Ann Arbor Mich.
Clark	Radioactivity and nuclear physics. 1947	VanNostrand
Kamen	Radioactive tracers in biology. 1947	Academic Press
Hevesy	Radioactive indicators. 1948	Interscience
Lapp & Andrews	Nuclear radiation physics. 1948	Prentice-Hall
Lawrence & Hamilton	Advances in biological and medical physics. vol. 1, 1948	Academic Press

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Alexander (editor)	Colloidal chemistry. 6 vol. 1926-46	Chem. Cat. Co.
Bartell	Laboratory manual of colloid and surface chemistry. 1936	Edward Bros.
Gortner	Selected topics in colloidal chemistry with especial reference to biochemical problems. 1937	Cornell Univ.
Hauser & Lynn	Experiments in colloid chemistry. 1940	McGraw-Hill
Berkmann & Egloff	Emulsions and foams. 1941	Reinhold
Clayton	The theory of emulsions and their technical treatment. ed. 4, 1943	Blakiston
Bennett	Practical emulsions. 1947	Chem. Pub. Co.

Plant Chemistry

Gildemeister & Hoffman	The volatile oils (trans. by Kremers) 3 vol. 1916-22	Wiley
Dragendorff	Plant analysis, qualitative and quantitative. (trans. by Greenish), 1921	Stecheret, N. Y.
Parry	The chemistry of essential oils and artificial perfumes. 2 vol., ed. 4, 1921	Scott, Greenwood, London
Haas & Hill	Introduction to the chemistry of plants. 2 vol., 1928-29	Longmans, Green
Rosenthaler	The chemical investigation of plants. (trans. by Ghosh) 1930	G. Bell, London
Kostychev	Kostychev's chemical plant physiology. 1931	Blakiston
Trier	Die alkaloide. 1931	Borntraeger, Berlin

van Rijn & Dieterle	Die glykoside. 1931	Borntraeger, Berlin
Tschirch & Stock	Die Harze. 3 vol., 1933	Borntraeger, Berlin
Nierenstein	The natural organic tannins. 1935	Sherwood, Cleveland
Wattiez & Sternon	Elements de chimie vegetale. 1935	Masson, Paris
Stoll	The cardiac glycosides. 1937	Pharmaceutical Press
Henry	The plant alkaloids. ed. 3, 1939	Blakiston
Hilditch	The chemical constitution of natural fats. 1940	Chapman & Hall
Gisvold & Rogers	The chemistry of plant constituents. 1943	Burgess
Jamieson	Vegetable fats and oils. ed. 2, 1943	Reinhold
Mayer	Chemistry of natural coloring matter. 1943	Reinhold
Klein	Handbuch der pflanzenanalyse. 1945	Edwards Bros.
———	Methods of analysis of the A.O.A.C. 1945	A.O.A.C.
Mantell	The water-soluble gums. 1947	Reinhold
Pratt	The chemistry and physics of organic pigments. 1947	Wiley
Guenther	The essential oils. vol. 1, 1948	VanNostrand

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Biochemistry

Morrow & Sandstrom	Biochemical laboratory methods for students of the biological sciences. 1935	Wiley
Harrow	Textbook of biochemistry. ed. 4, 1946	Saunders
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———	Advances in protein chemistry. (annual)	Academic Press
———	Advances in enzymology. (annual) 1941-49	Interscience
———	Advances in carbohydrate chemistry. (annual) 1945-49	Academic Press
Carter et al	Biochemical preparations. vol. 1, 1949	Wiley
Hawk, Oser & Summersen	Practical physiological chemistry. ed. 12, 1947	Blakiston
Gale	Chemical activities of bacteria. 1948	Academic Press
Kleiner	Human biochemistry. 1948	Mosby
Mitchell	Textbook of biochemistry. 1948	McGraw-Hill
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Sahyun	Proteins and amino acids in nutrition. 1948	Reinhold
Williams	Detoxication mechanisms. 1948	Williams & Wilkins
Tauber	Chemistry and technology of enzymes. 1949	Wiley

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Winton & Winton	Structure and composition of foods. vols. 1-4, 1932-39	Wiley
Sherman	The chemistry of food and nutrition. ed. 7, 1941	Macmillan
Rosenberg	Chemistry and physiology of the vitamins. 1942	Interscience
———	Vitamins and hormones. (annual) 1943-49	Academic Press
Mitchell	Nutrition in health and disease. ed. 10, 1947	Lippincott
Pincus & Thimann	The hormons. 2 or more vols., vol. 1, 1948	Academic Press

McLester	Nutrition and diet in health and disease. ed. 5, 1949	Saunders

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Cowdry	Microscopic technique in biology and medicine. 1943	Williams & Wilkins
Gradwohl	Clinical laboratory methods and diagnosis. ed. 3, 1943	Mosby
Bray	Synopsis of clinical laboratory methods. ed. 3, 1944	Mosby
Kolmer & Boerner	Approved laboratory technic. ed. 4, 1945	Appleton-Century
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Sproull	X-rays in practice. 1946	McGraw-Hill

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Fourneau	Organic medicaments and their preparation. 1925	Churchill
Clark	Organic chemistry for students of pharmacy and medicine. 1929	VanNostrand
Hoffman	Photelometric clinical chemistry. 1941	Morrow
Allport	The chemistry and pharmacy of vegetable drugs. 1943	Newnes
Lynn	Organic chemistry, with applications to pharmacy and medicine. ed. 2, 1945	Lea & Febiger
Bentley & Driver	Textbook of pharmaceutical chemistry. ed. 4, 1946	Oxford Univ. Press

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Lebeau	Traite de pharmacie chimique. ed. 3, 4 vols., 1946	Masson, Paris
Appleyard & Lyons	Practical pharmaceutical chemistry. ed. 6, 1947	I. Pitman, London
Rogers	A textbook of inorganic pharmaceutical chemistry. ed. 4, 1948	Lea & Febiger
Jenkins, DuMez, Christian & Hager	Quantitative pharmaceutical chemistry. ed. 3, 1949	McGraw-Hill
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Beilstein	Handbuch der organischen chemie. 1918-date	Springer
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Heilbron & Banbury	Dictionary of organic compounds. vols. 1-3, 1943	Eyre & Spottiswoode
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Hodgman	Handbook of chemistry and physics. 1945	Chem. Rubber Publ. Co.
Lange	Handbook of chemistry. ed. 6, 1946	Handbook Publishers
Bennett	Concise chemical and technical dictionary. 1947	Chemical Publ. Co.

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Emerson	Essentials of medicine. ed. 10, 1931	Lippincott
Boshes	A review of medicine. ed. 5, 1942	Northwestern Univ.
Ackerman	Health and hygiene. 1943	Cattell
Garrison	A medical bibliography. 1943	Grafton
U. S. Nat. Inst. Health	A manual of industrial hygiene. 1943	Saunders
———	The pharmacopoeia and the physician. 1943	Am. Med. Assoc.
Goldman	Public medical care, principles and problems. 1945	Columbia Univ.
Cecil	A textbook of medicine. ed. 7, 1947	Saunders
Smith	Technic of medication. 1948	Lippincott

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Prinz	Dental formulary. ed. 5, 1936	Lea & Febiger
———	Accepted dental remedies. ed. 7, 1941	Am. Dent. Assoc.
Prinz, Rickert, & Dobbs	Pharmacology and dental therapeutics. ed. 9, 1945	Mosby
Burket	Oral medicine. 1946	Lippincott

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Tobias	Essentials of dermatology. ed. 2, 1944	Lippincott
Urbach & LeWinn	Skin disease nutrition and metabolism. 1946	Grune & Stratton
Harry	Modern cosmeticology. ed. 3, 1947	Chem. Publ. Co.

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Sisson & Grossman	The anatomy of the domestic animals. ed. 3, 1938	Saunders
U.S.D.A.	Keeping livestock healthy (Yearbook of agriculture, 1942)	Govt. Printing Office
Runnells	Animal pathology. ed. 4, 1946	Iowa State Coll.
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Hanbury	Science papers. 1876	Macmillan
Fluckiger & Hanbury	Pharmacographia. ed. 2, 1879	Macmillan, London
Bentley	Medicinal plants. 1880 (4 vols.)	Churchill, London
Millspaugh	Medicinal plants. 1892	Yornston & Co.
Schoepf	Materia medica americana potissimum regni vegetabilis. 1787 (bulletin, Lloyd Library 1903)	Lloyd Library
Monardes	Joyfull newes out of the newe founde worlde. 2 vols., 1925	Constable
Wehmer	Die pflanzenstoffe. 1929-31	G. Fischer
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Dioscorides	The Greek herbal of Dioscorides. 1934	Oxford Univ. Press

Trease	A textbook of pharmacognosy. 1935	Wm. Wood & Co.
Tschirch	Handbuch der pharmakognosie. ed. 2, parts 1, 2, & 3, 1930, 1932, & 1933	Tauchnitz, Leipzig
Gathercoal & Wirth	Pharmacognosy. 1936	Lea & Febiger
Wallis	Practical pharmacognosy. 1936	Churchill
Martinez	Las plantas medicinales de Mexico. 1939	Ediciones Botas, Mexico
Potter & Wren	Potter's cyclopaedia of botanical drugs and preparations. ed. 5, 1941	Potter & Clarke, London
Fischer	Praktikum der pharmakognosie. 1942 (lithoprinted 1946, Edwards Bros.)	Springer, Vienna
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Fleming	Penicillin, its practical application. 1946	Blakiston
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Gnadinger	Pyrethrum flowers. 1933	McLaughlin Gormley

		King Co., Minneapolis
Holman	A survey of insecticide material of vegetable origin. 1940	Imperial Institute, London
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Davison	Synopsis of materia medica, toxicology, and pharmacology. ed. 2, 1942	Mosby
Thienes	Fundamentals of pharmacology. 1945	Hoeber
Oldham, Kelsey, & Geiling	Essentials of pharmacology. 1947	Lippincott
Grollman &	Cushny's pharmacology and	Lea &

Slaughter	herapeutics. ed. 13, 1947	Febiger
Bastedo	Pharmacology and therapeutics. ed. 5, 1947	Saunders
Wright & Montag	Pharmacology and therapeutics. ed. 4, 1948	Saunders
Sollmann	A manual of pharmacology. ed. 7, 1948	Saunders
Krantz & Carr	Pharmacological principles of medical practice. 1949	Williams & Wilkins

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McNally	Toxicology. 1937	Industrial Medicine, Chicago
Gonzales, Vance, & Helpern	Legal medicine and toxicology. 1940	Appleton-Century
Thienes	Clinical toxicology. ed. 2, 1948	Lea & Febiger

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Burn	Biological standardization. 1937	Milford, Oxford
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Bentley	A textbook of pharmaceutics. ed. 4, 1937	Bailliere, Tindall & Cox, London

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Cooper	Tutorial pharmacy. ed. 3, 1938	Pitman & Sons, London
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Caspari-Kelly	A treatise on pharmacy. ed. 8, 1939	Lea & Febiger
Goris et Liot	Pharmacie galenique. Tome 1 and Tome 2, 1939	Masson et Cie, Paris
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Scott (coordinator)	The hospital pharmacy. 1947 (a series of papers, 40 pages)	American Hospital Assoc., Chicago
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Elman	Parenteral alimentation. 1947	Paul B. Hoeber, N. Y.
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Chute	Retailing by pharmacists. 1941	Burgess Publ. Co.
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Rost	Going into business for yourself. 1945	McGraw-Hill
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Robinson	Retail personnel relations. 1940	Prentice-Hall
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Bowers	Business law. 1947	Wetherbee-Rich
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Maerz & Paul	A dictionary of color. 1930	McGraw-Hill
Mayer	Chemical - technical dictionary (German - English - French-Russian). 1942	Chemical Publ. Co.
Stedman	Practical medical dictionary. 1946	Williams & Wilkins
Ullrich	Periodicals directory. 1947	Bowker
Webster	New international dictionary of the English language. 1947	Merriam

Report of the A.A.C.P. Observer to the First Pan-American Congress of Pharmacy Havana, Cuba

November 30—December 8, 1948

At the request of President Hayman and Chairman Burt, I undertook to represent this Association at the First Pan-American Congress of Pharmacy. I was asked to do this because your officially appointed delegate, Dr. Ernest Little, could not attend the meeting.

Your officers supplied full credentials entitling me to register as the official representative of the A.A.C.P. However, under *ad hoc* procedures, I was not permitted to represent two organizations. Accordingly, I registered as Representative of the United States Navy and as Observer of tthe A.A.C.P.

A copy of the official program has been filed with the Chairman of the Executive Committee. If and when the full report of the Congress is received, this will also be filed with the Association.

Dr. Justin L. Powers ably served as the Acting Chairman of the United States Delegation. The parliamentary procedures of the Congress were somewhat unorthodox by American standards and the language problem added to our difficulties. The Congress was planned by the National Pharmaceutical Association of Cuba. Professor Jose Capote Diaz served as President and Dr. Hector Zayas-Bazan as Secretary-General. All countries of the western hemisphere were represented and, in addition, observers from Spain and France.

At the inaugural session Dr. Powers presented an address prepared by Dr. Robert P. Fischelis, the official Chairman of the United States Delegation.

Apparently plans had not been completed for operating the Congress, and the organization of the several sections was accomplished during the meeting. Dr. Powers assigned the United States representatives to the various section meetings with the intention of preparing a consolidated report. This was not possible, however, because of the almost complete absence of English translations or press releases.

Four plenary sessions of the Congress were held. At the first of these Dr. Capote-Diaz presented a paper advocating the standardization of pharmacy curricula in the universities of the Pan-American countries. His proposal was referred to a special committee and Acting Chairman Powers assigned Dean Perry A. Foote of the University of Florida to serve on this committee.

The desirability of establishing a Pan-American Pharmacopoeia was discussed at the second plenary session. Dr. E. Fullerton Cook, Chairman of the U.S.P. Revision Committee, commented upon the proposal with particular reference to the activities of the World Health Organization in preparing uniform international drug standards. Discussion of this question was carried out almost entirely in Spanish and under rather disturbing parliamentary practices. All of the Latin-American countries favored the preparation of a Pan-American Pharmacopoeia. This was opposed in principle by the United States Delegation, and the committee report shows our vote against the plan of developing a Pan-American Pharmacopoeia.

The Third Plenary Session was devoted to discussion of the need for a Pan-American Bromatological Code, none of which is of particular interest to this Association.

A detailed plan for creating a Pan-American Federation of Pharmacy was presented by the Secretary-General at the Fourth Plenary Session. The Acting Chairman of the United States Delegation participated actively in this discussion, which at times became quite fervid. Final action resulted in approval of the report in principle. Any action on this matter probably will be delayed until the next meeting of the Congress.

The accomplishments of the Congress, as shown by resolutions adopted, were:

1) **Endorsement, in principle, of a Pan-American Pharmacopoeia (U.S. objecting).**
2) **Endorsement, in principle, of a Pan-American Bromatological Code.**
3) **Endorsement, in principle, of the desirability of a Pan-American Federation of Pharmacy.**
4) **Appointment of a committee to study the desirability of standardizing curricula in pharmacy in the universities of the Americas.**

Since no provision has been made for financing the Congress or its activities, it is not anticipated that any definite actions will grow out of any of the resolutions adopted by the Congress.

The Congress was invited to meet in the United States in 1950, but it was finally determined to hold the second Congress in Lima, Peru in 1951.

While the Congress appears, to your observer, to be an unwieldy organization with small likelihood of accomplishing actions affecting the activities of this Association, it may be advisable to provide for a representative or the A.A.C.P. at subsequent Congresses.

W. Paul Briggs

Report Covering the Conference of Constituent Member Representatives to American Council on Education

The program presented in Washington, January 28-29, 1949, covered a period of two days with an evening session on Friday. On the whole, the program was of unusually high order. The

discussions covered topics ranging from relationships of education and government to education and international relations.

EXPANDING RELATIONSHIPS OF EDUCATION AND GOVERNMENT, Dr. George F. Zook, President, American Council on Education.

Dr. Zook pointed out that the American Council on Education was established in 1918 as a result of the contacts between the government, represented particularly by the Army, and higher educational institutions in reference to student officer training programs. These educational institutions were brought together to speak as a group to the United States Government.

Originally there were representatives from seven national organizations such as the Association of American Universities, Association of American Colleges, Association of University Professors, etc. Since that time, the American Council on Education has grown and expanded with reference to membership and has been in almost daily contact with the Federal Government in relation to education.

Dr. Zook likewise traced the history of relationships of education and government from an early policy of total nonintervention up to the point where, in some foreign countries, education is primarily supported and controlled by governments. It was pointed out that the question of how far the relationships of education and governments should extend has been, and still is, a world problem. In the United States the attitude has gradually developed that the Federal Government, as well as state governments, have a responsibility to make available to citizens equal educational opportunities. Yet, while the Federal Government should support education, it should refrain from exercising control. Control should be largely through state and local organized educational agencies. The primary purpose apparently is to use the Federal Government with its vast resources to accomplish equality of education.

PROBLEMS OF SELECTIVE SERVICE, M. H. Trytten, Director, Office of Scientific Personnel, National Research Council; Chairman, Policy Committee, elective Service System Advisory Committee.

It was indicated by Mr. Trytten that policies for the operation of selective service regulations were still in the discussion stage. It had been suggested that deferment should be based on proficiency examinations and that the principle of assignment should be exercised. It likewise was pointed out that the Association of American Universities had gone on record as favoring no deferment whatever.

Two resolutions were adopted: namely,

(1) **Recommending that a policy of deferment of students be adopted.**

(2) **That institutions be privileged to define "Full-Time Student" and "Satisfactory Record."**

REPORT OF COMMITTEE ON A STUDY OF TAX EXEMPTION, L. R. Lunden, Comptroller, University of Minnesota.

It was pointed out that this report was the result of the work of a committee which had been appointed to study the problem of tax exemption, due to the fact that the Federal Government is contemplating taxation of income from business enterprises carried on by educational institutions and which compete with private commercial concerns. For example, it was pointed out that commercial laboratories have raised objections to exempting returns from funds donated for research by government or private individuals to research foundations which are not taxed on returns. It appeared to be the attitude of the committee that operation of a business enterprise by an educational institution which is directly utilized for educational purposes, is legitimate and should be tax exempt.

Distinction should be drawn between institutions per se and associated outside corporations managed and directed by the institution. Research foundations are not created for income purposes but as a means to accomplish an educational function.

REPORT OF COMMITTEE ON SOCIAL SECURITY LEGISLATION, Herman Gray, Professor of Law, New York University; Consultant to the Social Security Board; Chairman of the Council's Committee.

In this report the committee favored old age and survivals insurance for members of public educational institutions on a permissive basis, but recommended that coverage should be mandatory for private tax exempt institutions.

EDUCATION AND INTERNATIONAL RELATIONS, Andrew W. Cordier, Executive Assistant to the Secretary General, The United Nations, and Howard E. Wilson, Assistant Director, Division of Intercourse and Education, Carnegie Endowment for International Peace.

Mr. Cordier traced the progress of the United Nations in its efforts to provide relief and promote peace. He pointed out that, in his opinion, not as much had been accomplished as peoples of the nations have a right to expect, but more has been accomplished than they know.

Mr. Wilson stressed the need for more international coordination through educational and social agencies. Greater effort should be made in promoting international cultural relations, and this should be done to some extent by governments. He also stressed the point that the United States must have a more definite and clear-cut national policy of cultural relations.

B. V. CHRISTENSEN, *Delegate to the Council*

Report of the Delegate to the Seventy-Fourth Annual Meeting of the National Wholesale Druggists' Association in Chicago, Illinois

October 18-20, 1948

The meeting was well attended by representatives of both wholesale druggists and manufacturing pharmacists and chemists. Among the distinguished speakers were Dr. Edward C. Elliott, Director of The Pharmaceutical Survey; Dr. James E. McCarthy,

Dean of the Edward N. Hurley College of Foreign and Domestic Commerce, University of Notre Dame; and Mr. Ralph Bradford, Executive Vice President of the United States Chamber of Commerce. The programs on the various days were very well organized and could profitably be studied by our own membership in view of the difficulties in finding adequate time for the programs held at our natonal conventions.

Dr. Elliott summarized a number of the major recommendations which will shortly be released by The Pharmaceutical Survey Committee. In this connection, he emphasized the need for more emphasis by the colleges on the business and financial phases of drug store operation.

The program included two forum presentations which proved to be very interesting. One of these concerned retail drug store operations, including handling costs, departmentalization, accounting, stock control and buying policies. The other forum presentation described wholesale operations, including price and discount procedures, advance datings, returns and allowances, and manufacturers compensation plans, with their effect on distributors.

Dr. H. C. Nolen, formerly on the staff at Ohio State University and present Chairman of the N. W. D. A. Committee on Statistical Research, presented some very interesting data on wholesale drug handling costs. This study will continue and will be reported at future meetings.

N. E. Foss, *Alternate for Dean E. R. Serles*

Report of the Committee on Graduate Study in Pharmacy

For the past three years the Committee on Graduate Study in Pharmacy has compiled data relative to assistantships, fellow-

ships, and other sources of financial aid available to graduate students, and have presented such data to the A.A.C.P. for publication. The purpose for compiling such material has been to disseminate the information obtained concerning financial aid in an effort to encourage superior students to pursue graduate work in the various fields of pharmacy. This year the committee has continued this practice with the hope that the faculties of the various member colleges will utilize the information presented to stimulate qualified students to take advanced training in the pharmaceutical fields.

The "American Foundation for Pharmaceutical Education" fellowships in pharmacy are of major importance and should be called to the attention of all students interested in graduate education. The Foundation has announced a limited number of fellowships for students seeking graduate degrees in pharmaceutical subjects. These fellowships are open to students (men or women) qualified for registration in approved graduate schools or colleges for one or more of the following major fields: Pharmacy, Pharmaceutical Chemistry, Pharmacology, and Pharmacognosy. It should be emphasized that the student may receive such a grant and carry out his advanced work at an institution of his own choosing, provided the institution meets the approval of the Foundation. Each Fellow will receive from the Foundation a stipend to cover the year of his appointment, plus an allowance for tuition and miscellaneous term bills. The fellowships are granted on a yearly basis and must be renewed at the end of that time. Application forms and information concerning Foundation fellowships may be obtained by writing to the "Board of Grants, American Foundation for Pharmaceutical Education, 330 West 42nd Street, New York 18, N. Y.

In addition to the financial assistance provided by the Foundation, a considerable number of fellowships and assistantships are available at different institutions. In order to obtain up-to-date information on the assistance available, the Committee distributed questionnaires to the Deans or Directors of the sixty-four member schools of the Association early in the year of 1949. Fifty-three replies to the questionnaire were received.

The available data on financial assistance for graduate students as of September 1949 were compiled and distributed at the A.A.C.P. meeting held in Jacksonville.

In the table which follows, it will be noted that thirty schools have indicated that they offer graduate instruction leading to advanced degrees in one or more of the four major fields of pharmacy. Twenty-three schools replied that graduate instruction is not offered.

Institutions Offering Graduate Courses Leading to an Advanced Degree in One or More of the Four Major Fields of Pharmacy

Institution	Pharmacy		Pharm. Chem.		Pharmacology		Pharmacognosy		No. of Graduate Students
	M.S.	Ph.D.	M.S.	Ph.D.	M.S.	Ph.D.	M.S.	Ph.D.	
University of Buffalo	x		x	x	x	x	x		4
University of California			x	x	x	x			22
Cincinnati College of Pharmacy			x						1
University of Colorado	x		x	x					10
Columbia University	x		x				x		9
University of Florida	x	x	x	x	x	x	x	x	10
University of Illinois	x		x	x	x	x	x	x	21
University of Iowa	x	x	x	x	x	x	x	x	10
University of Kansas	x		x	x					10
University of Maryland	x	x	x	x	x	x	x	x	39
Massachusetts College of Pharmacy	x	x	x	x	x		x	x	17
University of Michigan	x	x	x	x					10
University of Minnesota			x	x			x	x	21
University of Mississippi	x		x		x				3
Montana State University	x		x		x				3
University of Nebraska	x		x		x		x		23
University of North Carolina	x	x	x	x			x	x	7
North Dakota Agricultural College			x						1
Ohio State University	x	x	x	x	x	x	x	x	12
Oklahoma University	x		x		x		x		—
Oregon State College	x		x		x		x		0
Purdue University	x	x	x	x	x	x	x	x	55

Rutgers University			x						7
South Dakota State College	x		x		x				0
Temple University	x		x		x				0
University of Texas	x		x				x		6
University of Washington	x	x	x	x	x		x	x	13
Wayne University			x		x	x			0
Western Reserve University	x	x	x	x	x	x	x	x	3
University of Wisconsin	x	x	x	x			x	x	20
Total Number	24	11	30	17	19	10	18	12	327

The number of schools offering the Masters' degree and the Ph. D. degree for the years 1946, 1948, and 1949 are listed for each of the four major fields.

Year	Pharmacy		Pharm. Chem.		Pharmacology		Pharmacognosy	
	Masters'	Ph.D.	Masters'	Ph.D.	Masters'	Ph.D.	Masters'	Ph.D.
1946	20	7	23	11	15	6	10	8
1948	22	8	27	15	17	10	16	10
1949	24	11	29	16	19	10	17	11

The number of graduate students in pharmacy schools is summarized according to the various types of appointments on which the students are maintained and the total number of students compared to the total number in 1946 and 1948.

NUMBER OF GRADUATE STUDENTS IN PHARMACY

Type of Appointment	No. as of Feb. 1949		Expected No. as of Sept. 1949		Total No. as of June 1946	June 1948	Feb. 1949
	Masters'	Ph.D.	Masters'	Ph.D.			
Fellowship	47	58	45	55	36	190	105
Assistantship	48	35	57	28	38	91	83
G. I. Benefit	24	13	17	3	27	31	37
Scholarship	6	1	1	5	14	0	7
Self Financed	41	12	8	5	14	38	53
Instructors	7	8	6	4	3	8	15
Hospital Interns	4	1	1			2	5
Asst. State Chemist		1				1	1
Total Number	188	129	136	100	132	274	306

This information reveals that the number of graduate students in schools of pharmacy has increased thirty-two over last year, indicating a continued interest in advanced work in pharmaceutical fields. The estimated number for September 1949 is 236 indicating a probable drop in graduate students next year; however, this estimated number is probably low since previous estimates have been lower than the true number.

One of the problems with which this committee is concerned is whether sufficient effort is being made by all the member colleges to uncover and encourage those graduating students who have native ability, desire, drive, and other necessary qualifications for entering graduate work. In those schools which have substantial graduate work in progress, this is not such a great problem since undergraduates become aware of the opportunities to further their education. In addition, staff members in these institutions, because of their interest, encourage superior qualified students to continue. But in those schools where no graduate courses are offered, the problem of being sure that qualified seniors are encouraged to continue becomes more difficult. Furthermore, there exists in pharmacy, as in no other profession, the undesirable practice of encouraging students to take advanced training in the same institution in which they obtained their undergraduate degree. This, of course, is not in line with a sane policy to improve education in pharmacy.

In order to determine the approximate extent of these two problems concerning graduate education, the following question was asked the Deans or Directors of the member colleges: "State the number of seniors graduating from your institution during the period from September 1, 1947 to September 1, 1948 who entered graduate work (a) in your institution; (b) in some other institution."

The fifty-two schools returning the questionnaire reported that a total of seventy students graduating during the period September 1, 1947 to September 1, 1948 entered graduate work. Fifty-seven (81.4%) of these students as undergraduates at-

tended schools which also offer instruction at the graduate level, even though only fifty per cent (31 out of 64) of the member colleges offer such instruction. Of these fifty-seven, forty-nine (86%) entered upon graduate work in the same institution in which they had their undergraduate training. Only eight (14%) were encouraged successfully to attend another institution. This means that approximately seventy per cent (49 out of 70) of the graduate students in pharmacy are attending the same institution in which they received their undergraduate training. It is quite apparent that graduate students are encouraged to continue their education in the institution in which they obtained their undergraduate degree rather than encouraged to go to another institution.

Obviously the main reason for this situation is the need for sufficient staff to assist in handling undergraduate teaching loads. The easiest and surest way to fill such positions is to encourage qualified students to remain for graduate work. This is an unhealthy situation for graduate education and there is no reason why it shohld exist to such a high degree. The Deans, Directors, and Faculties should promote the interchange of students who desire to enter graduate work. Cooperation among the various schools in this respect is of prime importance.

"The Committee on Graduate Study in Pharmacy recommends that the Association emphasize the responsibility of each member college to make a concerted effort to inform qualified students in their graduating classes of the need for graduate students in Pharmacy, of the opportunities for graduate study, and of the special advantages to be gained in pursuing work toward a graduate degree in an institution other than the one in which the undergraduate degree was obtained."

One of the objectives of the Committee on Graduate Study has been to bring to the attention of the Association such matters as pertain to needs, requirements, procedures and standards in graduate work as may influence the extension of graduate education in schools of pharmacy. A logical preliminary approach to

the above problems has been a study of the general criteria concerning graduate training in the various fields of pharmacy as set forth by outstanding graduate schools of pharmacy. Such information gives an indication of the general standards maintained in these schools and may serve as a guide for schools interested in improving or establishing graduate instruction. These general criteria were distributed at the A.A.C.P. meeting held in Jacksonville.

It is hoped that this Committee through the reports of its findings has presented information which will promote and improve graduate education.

J. E. CHRISTIAN, *Chairman*

Report of the Committee on World Congress on Pharmaceutical Education

This Committee has neither met nor communicated during the eight months that have passed since the undersigned chairman presented his report at San Francisco in August 1948. The reason was that the necessary preliminary steps were not taken by the secretary of the American Pharmaceutical Association. Since the World Congress on Pharmaceutical Education is to be a part of the World Congress of Pharmacy, planned on the occasion of the one hundredth anniversary of the American Pharmaceutical Association in 1952, the work of this Committee cannot be started before the frame, *i.e.*, the World Congress of Pharmacy, is definitely secured.

It was not until a day before the present report was to be delivered, that the secretary of the American Pharmaceutical Association made clear his definite intention to take the preliminary steps as outlined in the 1948 report of the undersigned. When this is done and positive results are achieved and communicated to this Committee, it will start its work, draft a program and decide on the individuals and groups to be approached and invited.

GEORGE URDANG, *Chairman*

Report of the Committee on Libraries (1948)*

At the 1947 meeting in Milwaukee, this Committee presented the Exchange Plan of the Medical Library Association for your consideration.[1] During the year a few colleges of pharmacy have taken out institutional membership in the Association.

The annual meeting of the Medical Library Association was held in Philadelphia last May. Pharmaceutical libraries were represented by the presence of several librarians from both the colleges of pharmacy and the pharmaceutical manufacturers. They held an informal session of their own.

This is mentioned to give emphasis to the fact that the Medical Library Association is giving attention to our pharmaceutical libraries, and we believe deservedly so, because pharmacy, in the fields of education and research, is closely allied to medicine. The growing interest in research in our schools of pharmacy demands,

*This report (including the attached paper by Miss Marshall) and the two reports that follow were read at the 1948 meeting at San Francisco but due to an oversight were not published in the October (Proceedings) number.—Ed.

[1]See this Journal, Volume 11, pages 516 and 725.

not only better trained staffs but greater library facilities and more and better trained librarians. Pharmaceutical librarians need the help and inspiration that comes from such organizations as the Medical Library Association and the fellowship of its annual meetings.

The supply of medical librarians is short and the demand is great. In an effort to solve this problem the Medical Library Association has a training program for medical librarianship. In support of this program this Committee proposes that pharmacy approve librarianship as an acceptable career for graduates from schools of pharmacy. If, as we believe, this proposal has merit, merely to suggest it is not enough. Publicity concerning the opportunities for service as medical and pharmaceutical librarians will need to come, not only from librarians, but from pharmaceutical educators as well. It will be necessary to get the idea of a career as a librarian into the thinking of our students early in their college experience.

In this suggestion there is no thought that the regular pharmacy curriculum be modified in any way for those anticipating librarianship. Librarians, like pharmacists, learn to do by doing, therefore, one may learn through experience to be a superior librarian. However, a period of post graduate training in a library school should be of great assistance.

The Pharmacy Curriculum Basic to Librarianship Serving Pharmacy, Medicine, Biology, and Chemistry

Medical librarians suggest that some instruction in medical subjects is regarded as basic for a career in that field. The pharmaceutical curricula reach into many fields of science; namely, chemistry, biology, pharmacology, pharmacognosy, physiology, toxicology, posology, bacteriology, and materia medica. This permits the student to become acquainted with the terminology in these many fields as well as in pharmacy. In addition to instruction in these sciences, basic to medicine, students may be required to take courses in physics, mathematics, psychology, and the languages

together with courses in English, literature, history, economics and sociology. Moreover in most schools of pharmacy, students are given introductory courses in the history and ethics of pharmacy and medicine.

No other undergraduate curriculum is so diversified as that of pharmacy, and it should be thoroughly basic to the training for a medical and pharmaceutical librarian.

It is becoming more and more apparent that pharmaceutical libraries must be made an integral part of the teaching and research activities of our schools. They must be housed in quarters adequate for the services which they are expected to render and be made available and attractive for both the teachers and students.

A set-up of this kind would require the services of a trained librarian who should be regarded as an important member of the staff, for students have to be taught how to use the library. Librarians, like teachers, must not only be well trained, but be endowed with patience and enthusiasm and have an interest in research, even to the extent of being capable of doing it.

These high standards in the matter of education and personality should appeal to many capable young men and women who graduate each year in pharmacy.

In support of the proposals set forth in this paper, and as a part of the Report of the Committee on Libraries, Miss Mary Louise Marshall, Librarian, Rudolph Matas Medical Library, Tulane University, new Orleans, Louisiana, will offer a paper entitled, "Librarianship in the Field of Pharmacy."

C. O. Lee, *Chairman*

Librarianship in the Field of Pharmacy

MARY LOUISE MARSHALL

Librarian, Rudolph Matas Medical Library, Tulane University

The pharmaceutical library, whether attached to a college of pharmacy or the research division of a pharmaceutical manufacturer, is a specialized library which should be served by a person trained not only in library science but in the sciences. The ultimate in scientific effort is that of alleviating suffering and curing the ills to which man is heir. Pharmaceutical research is busy with the synthesis of new medicinals, their action, and means of standardizing them. Well trained, skilled specialists are needed to keep work of this kind going forward. These workers are in constant need of the reference material which only a good library can furnish and well trained librarians can make readily available.

The use of the library as a means of education has become increasingly important within the past decade. The library has achieved a metamorphosis, from the conception of it as a storehouse and museum, to the modern idea of it as a bridge over which must lead the road to learning. Even methods in teaching have changed in accordance with these ideas. Whereas formerly the student was taught by means of lectures and examination, with a textbook and notebook, in these modern days many college courses require no single text, but rather a series of reference lists to the current literature of the specialty. There are several marked advantages to this method, over those in the past. First, the student is given a broader understanding through consideration of several expositions rather than of one, as in a single textbook. Second, in training the student to gather his information from current publications, he is taught the necessity for continuing professional reading after graduation. No scientific knowledge is static, and the library offers the best opportunity for continued graduate study so necessary to any art and practice based on science.

The development of librarianship as a profession has played no small part in this changed conception of educational method. The organizational background which enables an efficient librarian to produce on call a single title or material on any one of innumerable topics within the library's field, is not an accident, but the result of training and method as developed in accredited library schools. Even a small library administered by an efficient librarian will better serve its clientele than will a larger collection under poor direction.

What then are the qualifications of a librarian working in the several medical sciences? What educational background should she have? What of her library school work? Is additional specialized training necessary, and if so of what should it consist?

It has been said that "librarianship is a social activity—the establishment and maintenance of contact between men and books."[1] Certain it is that personal as well as acquired qualities make for success in library work. Carnovsky names as the qualities of "librarianship, inherent or to be acquired in early life, ability to get along with people, bookish interests, imagination and a mind which prefers organization to confusion."[2] Gapp believes that there should be in addition "a certain curiosity, an intellectual and emotional drive which gives some evidence of future growth," as well as "an appreciation of the relation of routines to knowledge, the social structure and educational objectives."[3] To these might be added adaptability, a pleasing personality, some nerve (rather than nerves), a sense of humor and a strong constitution. All of these attributes apply equally well to librarianship in the field of medicine.

Regarding the preprofessional training of the librarian, Wilson says, "Neither the scholar without library training, nor the librarian without scholarship of a high order can bring to the administration of libraries all the abilities which are demanded if they are to be nicely adjusted to all the needs of organization, administration, scholarship and investigation."[4] The pre-library school training of the pharmaceutical librarian should include a

B. S. with a major in the basic sciences which are prerequisite for pharmacy and a reading acquaintance with German and/or French. Even a limited facility in Latin and Greek is a great aid in familiarizing one's self with medical nomenclature. Knowledge of other modern languages represents a distinct advantage.

The second step in the training of the pharmacy librarian is a year's course in professional librarianship (a) "to give the student a broad overview of librarianship; (b) to acquaint her with the library's role in education; (c) to set forth for her in appropriate relationships the theory and principles underlying the major subjects in the field; (d) to acquaint her with the body of literature in the field; and (e) to give her a command of library procedures fundamental for future professional performance."[5]

In the early library schools, learning by doing was the basic plan. Modern curricula tend to stress the theory of practical subjects such as administration, book selection, cataloging, reference and bibliography, rather than actual practice work. Certain leaders seem to feel that the ideal might lie somewhere between these two methods. Some modern librarians have been branded technicians and it should be remembered that the merit of techniques is limited by the extent to which they serve a useful purpose. Librarians should be so familiar with means and devices that they may choose and employ them as need arises.

There still remains the need for specialized training for work in medical libraries.[6] This matter is presently being studied by the Committee of the Medical Library Association having to do with training for Medical Librarianships. At its meeting in May, 1947, the Association unanimously approved specialized training at three levels:[7]

1. **A semester's instruction in medical bibliography, medical library administration, etc., to be offered in the spring and summer sessions in three library schools, geographically separated, i.e., in the East, Middle West and West, respectively.**

2. **In addition to completion of training for grade 1, a six months' term of supervised experience in a medical library and under**

the direction of a medical librarian approved by the Training Committee.

3. Graduate work in library science and in medical or related subject fields, leading to an advanced degree,

or

Completion of a two years' course correlating work in library science, medical library work and medical subject fields, leading to an advanced degree.

It would seem that the variation in training for the librarian in the related field of pharmacy would be in the pre-professional recommendation of training in pharmacy, and the specialized training as recommended at grades 2 and 3. The librarian of the pharmaceutical library surely needs the library school training which may either include or precede the semester's instructional course in medical bibliography, medical library administration, etc. In cooperation with the Training Committee of the Medical Library Association, such a course is now being offered as an elective in the spring semester of the Columbia University School of Library Service, and if need is shown, may be repeated in the summer session.

Specialized training for the field of pharmacy as recommended at grade 2, comprises a period of supervised experience in a well-organized library of the specific type,—in this case in an active and modern pharmaceutical library. Such on-the-job training, corresponding to a medical fellowship or residency, gives practical experience in putting into active practice the instruction represented at the grade 1 level, at the same time that it gives to the trainee first-hand knowledge of pharmaceutical books and journals through their actual and active use. Completion of such specialized training based on undergraduate work in pharmacy and in languages could but result in improved and more intelligent cooperative service through the use of printed materials to workers in the field of pharmacy.

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Report of the Committee on the United Nations Education, Scientific and Cultural Organization (1948)

Reports at the second annual session of the General Conference of UNESCO which met in Mexico City showed that much progress had been made toward perfecting an active and effective organization, revising the program to a more practicable form, and laying the foundations for the important undertakings planned for the future.

The tensions and contentions in the world today show so plainly that hope for peace between nations can best or only be attained through the principles on which UNESCO is founded. If peace is ever to be established it can only become universal and permanent through the free contacts, understandings and mutual confidence of all peoples and people.

American Pharmacy occupies an extraordinarily advantageous position for aiding in promoting the objectives of UNESCO. Its 55,000 drug stores are visited daily by millions of people. The

relationship between the pharmacist and the public is based on confidence and respect. No other agency is so strategically placed, its personnel so accessible and so capable of influencing the thoughts of the American people..

It would seem to be the duty of the schools and colleges of pharmacy to inform their students about the objectives of this stem of the United Nations and to take the lead in the organization of convocations for that purpose in their universities and colleges.

Your Committee, and especially its chairman, did not find it possible after appointment of the Committee to organize and implement a plan such as is hinted at in this report. This is to be regretted. However, the Committee is convinced that the active support of this Association of the plans and projects of UNESCO can be of value far beyond what ordinarily might be expected from such a small organization.

H. Evert Kendig, *Chairman*

Report of Committee on Predictive and Achievement Tests (1948)

When this Committee presented its report at the 1947 Association meeting, it asked to be continued in an advisory capacity to The Pharmaceutical Survey so that it could closely follow its testing program and be ready to carry on the work which The Pharmaceutical Survey Achievement Testing Committee began. When the American Association of Colleges of Pharmacy Committee on Predictive and Achievement Tests was appointed by Dr. Uhl, it was understood that it would be more or less inactive until called upon by The Pharmaceutical Survey Committee on Achievement Testing.

While this Committee has not been called upon to function, the chairman has been informed of and has participated in the work of The Pharmaceutical Survey Committee on Achievement Testing. It seems desirable that the relationship between the two committees be continued.

Recommendation No. 1. It is recommended that this Committee be continued in an advisory and consultative capacity to The Pharmaceutical Survey Committee on Achievement Testing.

Recommendation No. 2. It is recommended that this Committee accept the responsibility for the continuation of the program of testing, initiated by The Pharmaceutical Survey, whenever The Pharmaceutical Survey shall relinquish its program.

Recommendation No. 3. It is recommended that the American Association of Colleges of Pharmacy make provision in its budget for funds to carry out the work of the Committee on Predictive and Achievement Tests, when the testing program becomes the responsibility of this Committee.

RALPH F. VOIGT, *Chairman*

Report of the Representatives to the National Drug Trade Conference

The 1948 annual meeting of The National Drug Trade Conference was held in Washington, D. C. on December 14, 1948.

The report of the Committee on Uniform State Legislation was received and the committee continued. The committee reported progress and agreement on all uniform laws except the State Pharmacy Laws, where differences continued over the so-called "restrictive sales provisions." The remainder of the morning session was devoted to routine reports and general discussion of the Lobby Registration Laws, none of which is of particular concern to this body.

The afternoon session was devoted to the "Findings and Recommendations of The Pharmaceutical Survey." Dr. R. L. Swain, Dr. Ernest Little and N.A.B.P. Secretary Costello participated in a symposium covering the report as to "The Overall Picture," "The Colleges," and "The Boards of Pharmacy." Survey Director Dr. Edward C. Elliott addressed the Conference on the "Various Phases and Aspects of The Survey," followed by an extended discussion of the report as a whole.

The following resolutions were adopted by the Conference:

1. RESOLVED:—That the National Drug Trade Conference reaffirms its resolutions adopted at the 1947 Annual Meeting with respect to the reduction in alcohol tax and the elimination of the 20% excise tax on toiletries.

2. RESOLVED:—That the National Drug Trade Conference in Annual Meeting assembled expresses its vigorous condemnation of any plan, governmental or otherwise, which would deprive the public health professions of their independent professional status, free of political control, or would, in effect, socialize the field of medical care.

3. RESOLVED:—That the constituent bodies of this conference be urged to bring to the attention of the proper regulatory agencies the unethical practice of illegally furnishing articles and brands of articles other than those ordered.

4. RESOLVED:—That the Committee on Uniform State Legislation be continued and that the Committee be requested to continue to survey the field of pharmaceutical legislation in the interest of developing uniformity of state regulatory procedure as much as possible.

5. WHEREAS, the American Foundation for Pharmaceutical Education has underwritten about 100 Fellowships covering graduate work in the various fields of pharmacy with funds supplied by the drug industry as recommended by this Conference last year, and

WHEREAS, the majority of these students will require one or two more years to properly qualify as teachers in our accredited colleges of pharmacy, and

WHEREAS, many new graduate students are still called for to supply an adequate number of teachers, and

WHEREAS, substantial benefits are already accruing to the profession of pharmacy, and to the drug industry at large though

the services now being rendered by Foundation Fellows who have Completed their advanced training and are now serving as teachers or research workers, and

WHEREAS, the work of the Foundation is rapidly bringing about improvements in the quantity, quality and charcter of pharmaceutical education and a better evaluation of the importance of the service of pharmacy on the part of educators in general as well as of the other professions and the public at large,

THEREFORE, BE IT RESOLVED:—That the National Drug Trade Conference again fully endorses the work of the Foundation and urges retailers, wholesalers and manufacturers within the drug and allied industries to continue to give liberal financial support to the Foundation in order that sufficient funds may be available to complete the training of present Fellows and provide for additional fellowships.

6. RESOLVED:—That the National Drug Trade Conference expresses its satisfaction at the completion of The Pharmaceutical Survey and now urges its constituent bodies to give careful study to the findings and recommendations, to the end that pharmaceutical education and the practice of pharmacy may be improved and advanced.

Officers elected for 1949 are: Dr. Carson P. Frailey, President; Dr. Frederick C. Cullen, Vice President; Mr. R. C. Schlotterer, Secretary-Treasurer. W. Paul Briggs was appointed to the Executive Committee as representative of the A.A.C.P.

H. Evert Kendig, Hugo H. Schaefer, W. Paul Briggs,

Delegates

The Smith, Kline & French Laboratories, of Philadelphia, have established two traveling fellowships, the purpose of which is to encourage post-doctorate study and investigation in the fields of physiology and pharmacology. The fellowships, of $5,000 each plus traveling expenses, have been awarded to Edward B. Ferguson, Jr., M. D., of Tulane University, and Charles J. Kensler, Ph. D., of Cornell University, both of whom will spend a year in England. Dr. Ferguson will study the physiology of the kidney under Professor R. A. McCancé, at Cambridge University, and Dr. Kensler will carry on pharmacological research under Professor J. H. Burn, at Oxford University.

The President's Page

What we need in pharmacy is quality rather than quantity. It has been frequently stated that more general and pronounced loyalty on the part of the membership is one of the great needs of the profession. Loyalty implies pride and respect and confidence not only in the profession itself, but also in the personnel—the practitioners—that make up the body pharmaceutic. It implies that every person who is in any way practicing pharmacy is proud of the fact that he is a pharmacist and has the utmost confidence that he is in the best profession possible for him. This quality should be demonstrated in terms of action rather than in words. Loyalty to the profession implies that pharmacists take a positive attitude in protecting the interests of the profession and upholding its integrity not only in the practices which they carry on, but in the policies and principles which the profession represents to the public. The loyalty of a practitioner is reflected in the appearance of himself and his pharmacy, in the quality of the medicinals and pharmaceuticals which he carries in his store, in the care and skill with which he performs the many professional operations necessary to carry on his practice, and in his relationships with other members of the profession. The loyalty of the practitioner is likewise reflected in his dealings with the pharmaceutical public and in his attitudes and associations with physicians and members of other health professions.

Loyalty to the profession may likewise be manifested in the support which he gives to pharmacy through membership in professional organizations, such as state pharmaceutical associations and national pharmaceutical associations. It is a well-known fact that in a number of states less than twenty per cent of the practitioners of pharmacy hold membership in their state pharmaceutical associations. It is also common knowledge that in many states only a small fraction of the practicing pharmacists attend the state conventions. As a consequence, a low professional morale and low professional standards will likely prevail in those

sections. Many pharmacists are behind the time because they do not take advantage of these opportunities to learn of new developments and new processes and procedures that would definitely improve their practice. They likewise fail to profit by the enthusiasm and renewed interest brought about by association with others with common interests. Probably the greatest loss which comes to the profession in that state is the lack of unity and cooperation which should exist in order to promote the best interests of the profession in rendering a high type of pharmaceutical service to the public. As a consequence, pharmacy does not present the strong front which would be possible in the promotion of health measures and health movements through a strong association.

It would seem obvious that a large majority, if not all, of the pharmacists in the United States should be members of a national association such as the American Pharmacehtical Association. Actually, less than twenty-five per cent of the approximately 80,000 registered pharmacists in the United States are members of the American Pharmaceutical Association. When we realize and understand the strong and effective program that is fostered by the American Pharmaceutical Association resulting in untold benefits to the profession as a whole and to the general public, it is astounding to conjecture what might be done if even fifty per cent of the registered pharmacists enrolled as members in this Association.

Those engaged in pharmaceutical education might well engage in thorough introspection in reference to their contributions to the support of professional organizations and activities. Consider the sad plight of *The American Journal of Pharmaceutical Education*. Because of lack of proper support through subscriptions, it has become necessary to solicit financial support from other sources. Is there any reason why every person engaged in pharmaceutical education, every board member, every state association officer, every manufacturer, and actually every practicing pharmacist should not be a subscriber to this *Journal*? Isn't it actually a fact that this *Journal* represents the very heart of the profession and its perpetuation? Here is food for thought.

Loyalty to the profession of pharmacy implies likewise a strong and active interest in the improvement of the practices of the profession. Practitioners should be enough interested in the future of the profession to make it a point to be properly informed concerning the financial support and the quality of the instruction and the physical facilities provided in the several colleges of pharmacy throughout the United States. The pharmacists of every state should put forth every possible effort to see that the colleges within the state border are adequately and properly supported. Practitioners should realize and understand that it would be definitely to the best interests of pharmacy to limit the number of colleges to a number that could be adequately supported. In order that the practices of the profession may be improved, the colleges must regularly improve the education and training of its students so that each succeeding class of graduates will be just a little better educated and trained than the preceding one. Unless a college can do this, it is doubtful that it can justify its existence. Emphasis should be placed on quality of colleges and graduates rather than on numbers. This is the only way in which the standing of pharmacy before the public and in the eyes of related sciences and professions can be enhanced. This is the only way in which pharmacy can live and perpetuate itself in the future. It is up to the present day practitioner to take measures that will assure an improved quality of pharmacy and pharmacists for the future.

Loyalty, therefore, not only implies pride and respect and confidence in pharmacy as it is practiced today, but it includes a vision of what pharmacy should be in the future.

Bernard V. Christensen, President

MARRIAGES

Instructor Herbert J. Gebhart, St. Louis College of Pharmacy, and Miss Marjorie Mary Moran of Tampa, Florida, on August 27, 1949, at Tampa.

The Editor's Page

This very morning, the fourteenth day of September, there came to the Editor's desk an announcement from the office of the Director of Admissions and Registration of the University of Southern California which states that beginning in September 1950, the College of Pharmacy of that university will offer a four-year curriculum leading to the degree of Doctor of Pharmacy. The present curriculum for the Bachelor of Science degree, with majors in pharmacy and pharmaceutical chemistry, will be discontinued in June 1953, and this degree will not be awarded after June 1954. Admission to the College of Pharmacy in September 1950 and thereafter will require graduation from an accredited high school and two years (60 semester units) of acceptable college work. These units must include certain ones in specified subjects which will broaden the students' training in the basic scientific and cultural areas. Provision is also made on an individual basis for those students now registered in the School of Pharmacy to change their objective, if they so desire, from the B. S., to the Pharm. D. degree. The complete program will appear in the next issue of the catalog.

The University of Southern California is to be commended for the boldness of its declaration and for its pioneering spirit.

The evolution of an educational program is like the growth of a plant. It is not a steady even process. It has periods of dormancy and periods of rapid growth. But even in its dormant period it is laying plans and gathering forces which become evident when external conditions such as sunshine and showers make rapid growth possible.

The necessity for a pharmaceutical educational program began in our own country more than a century ago, when individual pharmacists organized local groups for the purpose of study for

professional improvement. This was followed by the establishment of schools for professional teaching. At the turn of the present century, these schools organized a national organization for the purpose of the improvement of the educative process including research . Since that time, the investment in both men and material equipment has ever been on the increase. The Commonwealth Study in the twenties and The Pharmaceutical Survey in these later days were the result of forces that were developing and pressing for improvement in what seemed to be the less active periods. These studies have focused the attention of educators and practitioners alike upon what must be done if pharmacy is to become and remain a vanquishing profession.

There are those who still plead to keep pharmaceutical education in the horse and buggy stage of professional education. If one will but study the history of pharmaceutical education in our own country over a period of fifty years, he will learn that it is not marking time, it is not in a retreat. There is evidence throughout all the western country that the forward movement is in flower. The fruit has ripened in the citrus belt of California. Pharmaceutical education is on the march.

Monthly there comes to the Editor's desk a number of well written, dignified appearing, undergraduate student publications which are a credit to the students producing them. This journalistic effort on the part of the students has often received commendation in these pages. However, in a recent issue of one of these publications from a western school which has done a job of which it need not be ashamed, an undergraduate student has blasted his own institution in a two-page article in such a way that would turn any prospective pharmacy student away from that school. Of course, that is the usual technic of the average undergraduate who seems to think he can improve an institution by exposing all of its bad points, instead of recounting and commending its good ones. In this particular case, not a single statement he make derogatory to his school is true. The Editor knows that by a more or less personal contact through two decades.

The student follows his blast at his own school (he even threatens it with a loss of accreditation) with a two-page appeal to the druggists of the state to furnish several thousand dollars worth of apparatus which he says "is necessary for carrying out the barest essentials for research in the various departments." The two-page list of apparatus is an amazing one, and includes almost everything from "rusty or deteriorated" surgical instruments to a "Warbug Respirator" to cost approximately $1,000 (at Johns Hopkins University is one made by a group of graduate students at a total cost of $40).

As I read this list of expensive apparatus about which the writer could know nothing in his undergraduate days, because of lack of experience, the thought came to me that perhaps this boy was not to be blamed after all; for he may have been reading lately some articles written by some of our outstanding pharmaceutical educators and published in *The American Journal of Pharmaceutical Education*. After reading these articles, one has the feeling that research is impossible unless one has a laboratory with ten acres of floor space and a building and equipment costing a couple of million. The cause of tuberculosus and the principle of immunization were not found and the isolation of insulin was not accomplished under such conditions.

Once a brilliant young graduate student, just out of Hopkins, told me that he had learned in that university that the bare essentials for research were "a table, a chair, a pencil, some paper, and time." To that, the Editor would add, "a clear and observant mind and a bit of that natural inherent curiosity that a boy has who tears the grandfather clock to pieces to find out what there is on the inside that makes it tick."

Undergraduate journalists need some mature faculty supervision to see that they do not make their writings appear pathetic.

RUFUS A. LYMAN

Gleanings from the Editor's Mail

In view of the statements made by Professor Kenneth Redman in his paper entitled "The Present Status of Pharmacognosy and Its Proper Place in the Pharmacy Curriculum", as published in the most recent Journal, I feel it necessary to make a few comments. Dr. Redman's paper, unfortunately, has not portrayed the present status of pharmacognosy as I believe it is. It seems to me that the present status of this science is on a much higher plane of thinking than that implied in the Redman paper. The science is not so much concerned with how many botanical and zoological drugs, or their constituents, are listed in the U.S.P. or N.F., as it is concerned with selecting the many facts and principles from the biological, chemical, and physical sciences and properly applying certain of these facts and principles to the study of drug substances obtained from plants and animals. With these one must also include certain techniques and scientific methods which are applicable to the proper study and understanding of the role of organisms in society. It really makes little difference whether there are 300 or 30 drug substances that are currently important and that the pharmacist should be familiar with in his daily practice. The present status of pharmacognosy is not at all concerned with such expressions of numbers. This factor was quite definitely ruled out by those responsible for the preliminary draft of a report, "Pharmacognosy in the Pharmaceutical Curriculum", one reason being that pharmacognosy teaching should be of a type wherein students would achieve a comprehension and ability to use facts and principles instead of merely **memorizing** them. If Professor Redman had taken a little time to study the report carefully, as I am sure several others have, he would have gained this thought.

Under **opinions**, wherein it has been stated by Redman that Schwarting and Youngken, Jr. "have also proposed the introduction of insect physiology, allergens, etc. as proper material to be included in pharmacognosy", as this statement is placed in the paper by Professor Redman, it is used to imply a fact actually not so implied in the original paper by these authors. Consequently the Redman statement is misleading. Actually, in the Schwarting-Youngken paper, a reference was made to a **review** of the principles of insect physiology so that the subject of insecticides might be adequately presented. Such a reference would be in keeping with the present status of pharmacognosy which is to make available facts and principles of other allied sciences to enable students to comprehend facts instead of merely

memorizing them. As for the subject matter of insecticides, a portion of this subject has been taught in pharmacognosy for many years; it, therefore, seems absurd for Redman at this date to "assign anything but mere panic to such proposals as to include insect physiology in pharmacognosy" when the very nature of even a botanical insecticide such as rotenone or pyrethrin depend in use upon a knowledge of certain principles of insect physiology.

The question as to how best to present subject matter in any course is open for debate. There are those of us in pharmacognosy who see merit in attempting to coordinate certain facts and principles pertaining to substances of natural origin with physiological uses and chemical properties. The present status of pharmacognosy is not concerned with a mandatory means by which this is done. Rather, it is concerned with having students gain an association of their learning in pharmacognosy with their future pursuits in society—retail pharmacy or otherwise. The selection of a method by which this association is best gained lies with the teacher. Anyone employing the taxonomic system would obviously, by the very nature of such a system, need to show relationships to phylogeny and morphology in addition to other more useful associations such as chemistry and physiology. It must be stated here that the Committee, in the preliminary draft of a "Report on Pharmacognosy' for The Pharmaceutical Survey, admitted several advantages and disadvantages for each of the five convenient methods for organizing subject matter in the course (Taxonomical, Morphological, Biochemical, Therapeutic, Physiological), and that Redman has been unfair in stating that the proposed use of either chemical or physiological classification "is to better fit in the insecticides, etc. subject matter". I am at a loss to understand how anyone could seek to imply so many misconceptions and be so incomplete when the facts and wording in the published literature are so clear.

This paper would not provoke such criticism from me had it not been for the fact that the title has such important application, and yet the subject matter does not present the proper status of pharmacognosy at all. Unfortunately, the writer of the paper seems to have twisted some statements made in the literature to appear to carry support for his main thesis which, essentially, is that because there are 393 official drugs, chiefly obtained from plant and animal sources, the present status of pharmacognosy is built around either this number or yet another number. I wish to make it understood here that the present status of pharmacognosy is not based upon any number of official or unofficial drugs but that it is based upon teaching certain principles (chemical, physical, and biological) and facts with which a pharmacy student may better learn the significance and importance of certain

substances obtained from plants and animals. Many of the principles and facts are concerned with the biosynthesis mechanisms of plants and animals and how the useful constituents of these organisms are made available to society. It is true enough that the official standards of drugs falling under the category of botanicals or zoologicals are important and therefore are reckoned with in pharmacognosy. But the learning of principles and facts which are the foundation upon which these standards are made has more importance in the present status of pharmacognosy. Professor Redman has unfortunately not quite seen this phase of the present status of the science.

H. W. Youngken, Jr.
University of Washington

July 25, 1949

To those interested in developing finer professional relations:*

It is the opinion of the Professional Relations Committee of the National Association of Boards of Pharmacy that our professional relations should not only be increased in the health professions but also to the student in pharmacy. To the student in such a way that he would know more about and create an interest in other fields of science and health, to the end that the professional man would become more interested in the student and in pharmacy.

Through the fine co-operation of Dean Rufus A. Lyman of the College of Pharmacy, University of Arizona, a series of lectures will be held at the weekly general assembly for all pharmacy students.

The plan is for an outstanding man to speak to the students on the subject of his profession in relation to pharmacy. The following fields will be represented—medicine, dentistry, veterinary, banking, law, merchant (general, law (pharmacy), Red Cross (blood bank), hospital, drug manufacturer, drug wholesaler, and medical detailer. This plan will take approximately twelve weeks and should give the student an insight of what is ahead of him in his field of endeavor, and surely the men who have appeared on the program will take away with them

*This letter is being sent to deans of colleges, members of state boards of pharmacy, state association secretaries, and to other parties that may be interested. We urge strongly your suggestions that will be helpful to Mr. Kelly's committee.—Ed.

a higher regard for the standard of pharmacy that we are striving to obtain.

It is this committee's hope that you will submit this plan to your faculty, and follow all or part of it to further Professional Relations among the pharmacy students. I would appreciate a word from you with any suggestions that you may have.

G. Benner Kelly, Chairman
Professional Relations Committee N. A. B. P.

Address suggestions to:
230 Sierra Vista Drive
Tucson, Arizona

ERRATA

The following corrections should be made in the July issue of The Journal:

Under Special Committee Appointments—

A. Committee should be changed to read: E. L. Cataline, Chairman; John N. McDonald, Carroll Gustafson, Alva G. Hall, C. J. Klemme.

Page 529, fourth line should read: **Tom D. Rowe.**

Page 529, in Recommendation 6, after the words **Pharmaceutical Education,** in line 2, insert the words: **in any program it may undertake.**

Page 539, last paragraph, change **Curriculum** to read **Executive.**

Notes and News

University of Arizona.—The School of Pharmacy, which was organized in 1947 as a part of the College of Liberal Arts, was, on July 1, 1949, erected into a College of Pharmacy by the action of the Board of Regents. Four departments were established within the college, namely, the department of pharmacy, the department of pharmaceutical chemistry, the department of pharmacognosy, and the department of pharmacology. There are six full-time and one part-time members on the staff. The registration for the first semester reached a total of 208 students.

University of Buffalo.—Prof. L. D. Lockie and Miss Inger Solum attended the Pharmacy Seminar at Madison in June.—A total of 331 students, which number included 5 graduate students, are registered in the fall semester.

Butler University.—Ground-breaking for the new pharmacy building began on October 18.—Dr. Karl Kaufman has been appointed head of the department of pharmacy and has been assigned certain executive duties.—Dr. Donald B. Meyers has been named a member of the staff in the department of pharmacology.—Dr. E. J. Rowe attended the Pharmacy Seminar at the University of Wisconsin during the summer.

University of Connecticut.—Dr. Wallace F. White has resigned to accept a professorship at the University of Minnesota. Dr. J. M. Turner, Yale University, has been appointed to the chair of physiology and pharmacology; and Dr. A. E. Schwarting, formerly of Nebraska, has been named associate professor of pharmacognosy.—Varro E. Tyler, Jr., and Margaret Adams are new assistant instructors in pharmacognosy and pharmacy respectively.—Sixty-five freshmen were enrolled in September.—This is the last year that work will be offered in New Haven. The new pharmacy building on the Storrs campus will be ready for occupancy in September 1950.—The local sorority group of Tau Phi Sigma became a chapter of the national organization of Lambda Kappa Sigma in September.—Two of the class of 1949 have entered Ohio State University and one has registered at Purdue for graduate work.

University of Florida.—Additions to the faculty are: Dr. Lauretta E. Fox in physiology and pharmacology; Herbert Gross in pharmacy; Dr. Eugene U. Still in pharmaceutical chemistry; and Mrs. Doris B. Clarkhuff, a teaching assistant.—There are nine graduate assistants

and four fellowship holders from the Foundation for Pharmaceutical Education. Drs. Gramling and Johnson have been promoted to associate professorships.—Additional graduate courses are being given in pharmaceutical chemistry and in pharmacology.—The pharmacy building has been rechristened "Leigh Hall," in honor of Dr. Townes R. Leigh who organized the school of pharmacy and directed its activities through its formative years.

George Washington University.—Dr. Salvatore J. Greco, Ph. D., University of Maryland, and Dr. John W. Schermerhorn, Ph. D., University of Minnesota, have been appointed to assistant professorships in pharmacy and pharmaceutical chemistry respectively. A number of part time appointees have been added to the staff.—The work in pharmaceutical administration has been increased to eleven credit hours and includes economics, pharmaceutical accounting, management and operation, and jurisprudence.—The first floor of the pharmacy building has been converted into a reading room and library.

University of Georgia.—Dean Emeritus Robert C. Wilson has accepted a position as visiting lecturer in pharmacy at the Southwestern State College at Weatherford, Oklahoma, for the academic year 1949-50.—The following additions have been made to the faculty: Dr. J. P. LaRocca, dispensing and biological products; B. M. Gilbert, dispensing and drug store management; E. H. Grinnell, organic chemistry; Robert Johnson, pharmaceutical chemistry; Frank Dobbs, pharmacognosy; and Dr. John Stegeman, part-time instructor in pharmacology.—The Georgia Pharmaceutical Association, the School of Pharmacy, and the Division of General Extension sponsored a two-day pharmacy seminar October 13-14. Subjects discussed were departmentalization, better management, new drugs, and state and federal laws as they affect the pharmacist.

Hardin College School of Pharmacy.—Dr. Ruth Holzapfel, formerly on the staff of the school of pharmacy of the University of Oklahoma, has been appointed professor of pharmacology; and Dr. John Biles, formerly in the division of sanitary chemistry of the University of Colorado, has received an appointment as professor of pharmaceutical chemistry.—The school is seeking additional instructors in the fields of pharmacy, biology, and physics.

Howard College, Birmingham.—Miss Josephine Siragusa, M.S., Columbia University, has joined the faculty as instructor in pharmaceutical chemistry.—Mr. Joe Vance, assistant superintendent of the South Highlands Infirmary in Birmingham and instructor in hospital pharmacy, has been elected president of the Southeastern Hospital

Pharmacists' Association.—Five leaders in hospital pharmacy in the Southeast will give lectures on various phases of hospital pharmacy before the class in that subject the current semester.

Idaho State College.—New members of the staff are Dr. Otto Rahn, formerly of Cornell University, as professor of bacteriology; Miss Hazel Landeen, formerly of Drake University, as associate professor of pharmacognosy; Mr. Larry Gale as instructor in physiology; and Mr. Sidney Tobey from the University of Colorado as associate professor of pharmaceutical chemistry.—Prof. Ivan Rowland has been granted sabbatical leave to pursue graduate study at the University of Washington.—A new manufacturing laboratory has been fully equipped and additional apparatus has been acquired for several other laboratories.—The medical-pharmacy library has been moved from the general library into the pharmacy building.

University of Illinois.—A total of 58,810 prescriptions was filled by the hospital pharmacy during the last fiscal year. In addition, the manufacturing division of the hospital pharmacy supplied drugs under 211 different formulae in quantities ranging from a few gallons to a half ton of ointments, 2,000,000 tablets, 30,000 liters of intravenous solution in ampules, and 110,000 doses of test allergens.—Pharmacy Background Test Scores for 125 students who have been admitted to the freshman class were the highest since the test was introduced, and 78 of the 125 had had one or more years of college training.—The following appointments have been made recently: Dr. Charles A. Reed, formerly of the University of Arizona, to be assistant professor of zoology; Dr. Dwight L. Deardorff, formerly of Mellon Institute, to be associate professor of pharmacy; and Dr. Frank T. Maher, currently on leave serving as research associate at the Mayo Research Foundation at Rochester, to be professor of pharmacognosy and pharmacology and head of the department, taking the place of the late Dr. Elmer H. Wirth.

The State University of Iowa.—Frederick M. Dearborn has been appointed hospital pharmacist, and Mrs. Robert Gregg and Mrs. Marybeth Hartmen Jaggard have been made assistant hospital pharmacists in the University Hospital. The Hospital Pharmacy is a service unit of the Department of Drug Service of the College of Pharmacy and services the General Hospital, the Children's Hospital, and the Psychopathic Hospital, which have a combined capacity of 1,000 beds.—At the June and August convocations, the doctorate was conferred upon Robert L. Van Horne, Moreshwar V. Nadkarni, Gail A. Wiese, and Donald B. Meyers, and the master's upon Marybeth Jaggard and Vishnu N. Bhatia.

University of Kansas.—Dr. Gordon H. Svoboda, Ph.D., University of Wisconsin, has been appointed assistant professor of pharmacy; Dallas W. Ruehlen and Jack L. Beal are new appointees in dispensing. Robert Campbell, James Kiene, and Desmond Gibson are graduate assistants.—Two fellowships of $1,500 each have been renewed by Parke, Davis & Co.—Two Research Corporation fellowships and three American Foundation for Pharmaceutical Education scholarships, each amounting to $1,500, have been awarded to graduate students in pharmaceutical chemistry.—In a new film depicting the University of Kansas, Dr. J. H. Burckhalter, of the department of pharmaceutical chemistry, represents the "Spirit of Research" in the university.

Long Island University.—Profs. Fonda, Milana, and Alstodt attended the Summer Pharmacy Seminar at the University of Wisconsin.—The model pharmacy and dispensing laboratory have been completely remodeled.—Dr. Ralph H. Cheney spent the summer in research at the Marine Biological Laboratory at Woods Hole.—New faculty additions are Prof. William Ehrman, formerly at the College of William & Mary, in biology; Edward Stempel in pharmacy, and Murray Rosenzweig in chemistry.—A new course in business administration has been introduced into the program.

University of Maryland.—The registration for the fall semester totaled 342. Of this number, 75 were freshmen, 13 were transfers to the second year class, 33 were graduate students, and 25 are women.—New additions to the faculty are Dr. Francis E. Miller in Chemistry; J. Mehsen Joseph, graduate assistant in bacteriology; Morton Kahn, assistant in business administration; Karl M. Morgenstein, graduate assistant in zoology; Joseph J. Fiala, laboratory assistant in pharmacology; and Charles L. Beckel, laboratory assistant in physics.—Jacob S. Hanker, Monte Konicov, Miss Ludmila Kregiel, Mrs. Jeffie Robson Langston, and Herman M. Mupsik have received fellowship grants from the American Foundation for Pharmaceutical Education.—Judson H. Sencindiver, honorary president of the alumni association, has made a donation of $400 to match a similar contribution made by the American Foundation for Pharmaceutical Education.—The Read Drug & Chemical Company has also made a contribution for an undergraduate scholarship. Two part-time scholarships have been awarded by the Deprtment of Education of the State of Maryland.—On October 4 the alumni association held a reception at the Hotel Emerson to welcome Dean and Mrs. Noel E. Foss.

University of Minnesota.—Fifty-four seniors were graduated at the June commencement. Three graduate students were awarded the doctorate.—Ten graduate students have been appointed teaching assistants

for the current academic year.—Robert H. Miller, a graduate student of last year, has received an appointment as assistant professor of pharmaceutical chemistry at the University of Washington.—Dr. W. J. Hadley served as field representative for the Minnesota State Pharmaceutical Association during the summer.—Drs. Hadley, Netz, and Almin attended the Pharmaceutical Seminar at the University of Wisconsin in June-July.—Four hundred and fifteen students were enrolled at the beginning of the fall quarter.

University of North Carolina.—During a two-months' illness of Dean M. L. Jacobs during the summer, Dr. E. A. Brecht served as acting dean.—The fall quarter began with 196 undergraduate and 13 graduate students.—Rex Paramore has been appointed to an assistantship and Albert G. Lowe and John Andrako have been appointed as half-time instructors.

University of Oklahoma.—Dr. John B. Bruce, 1949, University of Colorado, has been appointed assistant professor of pharmaceutical chemistry.—During the summer vacation, a large amount of remodeling and redecoration was done in the pharmacy building.

Oregon State College.—The fall enrollment has reached the 300 mark.—A new laboratory for pharmacology has been completed and has the most modern equipment.—New faculty appointees are: Miss Shirley F. Roeder, M. S., Washington State College, and Gordon B. Stirland, Idaho State College, instructors in pharmacy; and Miss Helen Beyerlein, Oregon State College, instructor in pharmacology.

Philadelphia College of Pharmacy and Science.—At the June commencement, honorary degrees were conferred upon Dr. E. Fullerton Cook and Prof. Freeman P. Stroup of the faculty, and Mr. John S. Zinsser, chairman of Sharp and Dohme, Inc., and Mr. William B. Bell, president of the American Cyanamid Company.—Dr. Ambrose Hunsberger, who for many years served the school as vice president, recording secretary, and trustee, died on July 8, in Philadelphia.—The Sixth Seminar on Modern Pharmaceutical Practice was held on July 12, 13, and 14.—A full week of orientation for freshmen was inaugurated this year. Talks were given by the president and department heads, and a number of predictive tests were administered.—New members in the faculty are Dr. Roger E. Fox in pharmacology and Dr. Eric Martin who inaugurated a course in biochemistry. Others who became members of the teaching staff are Dr. Nathan Hall, David Krigstein, Nina Sideri, Bernard B. Barshay, and William H. Lubbk. Grafton D. Chase rejoined the chemistry staff.

Purdue University.—Dr. C. O. Lee has been given a year's leave of absence in order to accept a visiting professorship at the University of Puerto Rico.—Dean Glenn L. Jenkins has returned from a six weeks trip to Japan, where he served as the chairman of a mission of the American Pharmaceutical Association as one of the expert consultants to the staff of General MacArthur on pharmaceutical matters, in Japan.—Drs. Lee and DeKay served on the staff of the Seminar for Teachers of Pharmacy held at the University of Wisconsin during the summer.—Seven graduate students who received the doctorate from the graduate school recently have accepted teaching positions or positions with manufacturing concerns or hospitals. Three of these occupy teaching positions; two, with manufacturing establishments; one, in a research position in a hospital; and one returned for a post doctorate fellowship.

Rutgers University.—The following staff appointments have been made: Dr. Pierre Smith, Ph.D., University of Maryland, assistant professor of pharmacy; Mr. William Bittner, A.M., University of Pennsylvania, in English; Mr. Elias Cohen, M.A., Johns Hopkins, in biology; Mr. Louis Caso, M.A., Columbia University, laboratory assistant in biology; and Mr. Werner Henning, A.B., laboratory assistant in chemistry.—The record enrollment began in September with 457 undergraduate and 6 graduate students.

St. Louis College of Pharmacy.—New members of the staff are Dr. Arthur G. Zupko and Mr. H. E. Bingenheimer, Jr., both from Purdue; Mr. Eino Nelson from the University of Washington, whose field is pharmaceutical administration; and Mr. David Honigberg from the Massachusetts Institute of Technology, who will teach mathematics.—The total registration has reached 450.—Membership in the student branch is 100 percent.—The alumni association has provided custom built tables and chairs, and fluorescent lighting for the library.—Dr. Noel M. Ferguson, formerly of the faculty, has been director of the new school of pharmacy at the University of Houston.

Medical College of the State of South Carolina—Reorganization of the administrative set-up makes the executive officer of the college, formerly known as dean, now president, and the former directors of the schools are designated as deans.—Donald E. Spoonheim, '49, South Dakota State College, has been added to the staff as associate in pharmacy.

University of Southern California.—Dean Alvah Hall spoke before the Southern California Branch of the American Pharmaceutical Association recently on the value of advanced educational standards to the

community by having pharmacists better trained.—The alumni association is holding well attended monthly meetings, and is taking an active part in college administration.—Mr. Jack H. Chase of the Exclusive Prescription Pharmacy in Los Angeles has been appointed lecturer in prescription practice.

Southern College of Pharmacy, Inc.—Registration for the fall quarter stands at 285.—Prof. H. C. Ward has resigned because of poor health and has been succeeded as head of the department of biology by Prof. King, formerly of the Minot State Teachers' College of North Dakota.—Mr. C. J. Douglas has been appointed professor of economics and English. Mr. Archie Armstrong has been made an assistant professor of economics.—Brig. General R. C. Hood, Jr., son of Dean R. C. Hood, has recently been transferred to Rio de Janeiro, Brazil, where he holds the position of Senior Military Attache of the Department of Denfense.

Temple University.—Dr. Arthur E. James served as editor of a recently published booklet commemorating the sesquicentennial of West Chester, Pennsylvania. The booklet gives a review of the development of the various West Chester industries from the time of their beginning in the community. Dr. James is vice president of the Chester County Historical Society and has written books on historic clocks and pottery.—Dr. James E. Munch recently made a trip to the Southern States and to the schools in the Caribbean area as a representative of Temple University, in order to study methods of teaching pharmacology and toxicology in the professional institutions of these areas. He also consulted with officials of the Puerto Rican government relative to the possibilities of establishing new drug industries including the cultivation of medical plants on that island. He also investigated mold and fungus problems in Puerto Rico, Cuba, and the Virgin Islands.—John A. Lynch has been elected first vice president of the Philadelphia Association of Retail Druggists, second vice president of Temple University Pharmacy Alumni Association, and fifth vice president of the National Association of Retail Druggists.—Dr. J. B. Sprowls has been elected secretary of the Philadelphia Branch of the American Pharmaceutical Association.

University of Tennessee.—Rho Chi initiated 16 new members in October.—Sixty students will be graduated in December; Dean Glenn L. Jenkins will deliver the commencement address to the graduating class of the combined professional schools.—83 new students registered for the fall quarter.—Mrs. Howard Hassler, '49, has been appointed instructor in pharmacy.—Dr. Albert Musick attended the Plant Science Seminar held in Madison in August.

University of Utah.—The Haack Laboratories of Portland, Oregon, have established an annual award to the most outstanding sophomore student in the school of pharmacy. This year the award went to Cal E. Christensen. The Heinz Scholarship award went to Benjamin P. Harrison, an upper classman.—Dean L. David Hiner has been appointed a member of the University Athletic Board.

University of Washington.—Drs. Nathan Hall and Louis Arrigoni have resigned from their positions in the department of pharmaceutical chemistry and their places have been filled by Mr. Robert Miller, who has nearly completed the work for the doctorate at the University of Minnesota, and Dr. Walter McCarthy from the University of Indiana.—After careful screening, 75 students were admitted to the freshman class .

University of Wisconsin.—Dr. Melvin W. Green, formerly director of the laboratories of the American Pharmaceutical Association, has been named as associate professor of pharmacy.—William O. Foye, Ph. D., has been appointed to an assistant professorship in pharmacy.

University of Wyoming.—Dr. Theodore O. King, who obtained his undergraduate degree from the University of Michigan and the Ph. D. from Georgetown University in pharmacology, has recently been appointed associate professor of pharmacology.—Mr. Raymond Kahl has been named an assistant professor in pharmaceutical chemistry.

To The Lilacs—by Ivor Griffith, Sc. D., President and Research Director, Philadelphia College of Pharmacy and Science. 1949, 270 pages, a number of illustrations. International Printing Co. Price $5.00.

The book is a mixture of prose and poetry. It is not a book to be read from cover to cover, but as one has the proper mood, he will turn from page to page until he finds one with Ivor Griffith in the same mood. Such an instance is to be found on page 11, where the author has a date with a spade. When this reviewer read the lines and saw the illustration on the opposite page, he had an intense yearning to sit down on that stone beside the author and commune with nature. Perhaps only those of us who have sprung from the soil can appreciate the intensity of that feeling. As I tore the wrapping from the book and exposed the bunch of lilacs on the jacket, I had a sensation, whether real or imaginary is immaterial, that the room was filled with the odor of lilacs. That odor perhaps can be appreciated only by one who lives in an Arizona desert. But whether you find yourself reading the poetry or prose, the pages breathe optimism, which is Ivor Griffith at his best.

Miscellaneous Items of Interest

Minutes of the Executive Committee (1949-50) of the American Association of Colleges of Pharmacy

Professional Colleges
Chicago, Illinois
October 10 and 11, 1949

First Session

1. The meeting was called to order by Chairman J. B. Burt. Present: President B. V. Christensen, Editor R. A. Lyman, Deans George E. Crossen, Noel E. Foss, J. Lester Hayman, John F. McCloskey, Hugo H. Schaefer, R. Blackwell Smith, Jr., and Secretary L. C. Zopf.

2. Chairman B. V. Christensen reported on certain personnel changes necessitated on some of the standing committees. He discussed a letter which he received from Dr. Newcomb pertaining to the teaching load of fellows on Foundation scholarships. He also introduced the topic of this Association being represented at the district meetings of the NABP and AACP, which was added to the agenda for later consideration. (See Item 26).

3. Secretary Zopf read communications received by his office which required action of the Executive Committee.

4. The proposed amendments of Article I of the By-Laws were discussed. It was the opinion that the Committee on Constitution and By-Laws had the power of wording recommendations within the understanding of the original drafts.

5. The recommendation from the address of the President-Elect on the study of the 5-year program was carefully considered. This recommendation had previously been referred to our Curriculum Committee for study.

6. Secretary Zopf gave a financial report on the **Pharmacy Teachers' Seminar.** To date, approximately $4,500 had been expended. Estimates for printing of the report were not available at this

time, although it was indicated the report could be made available in printed form from the balance of the $6,000 gift. It was moved by Smith-Hayman that the residue in the Seminar fund be used to publish abstracts of the outstanding Seminar contributions and that all colleges of Pharmacy receive copies of such publications. Carried.

7. On motion of Christensen-Hayman, the Secretary was instructed to draft a resolution of appreciation to the **American Foundation for Pharmaceutical Education** for their encouragement and financial support in making the first **Pharmacy Teachers' Seminar** a reality. Carried.

8. Crossen-Foss moved that, provided the necessary funds can be obtained, it is recommended that this Association continue to sponsor **Teachers' Seminars** and that the next Seminar be scheduled for the summer of 1950. Carried.

   It was moved by Crossen, seconded by Hayman that pharmaceutical administration be the topic for the proposed Seminar to be held in 1950. Carried.

9. Dean Hayman reported that the **Sub-Committee on 'A Brochure on Pharmacy'** had received replies from twenty-six colleges, and that the Sub-Committee is planning a detailed report for presentation at the next meeting of the Executive Committee.

10. Report forms sent to member colleges were discussed and it was the unanimous opinion that the present forms were in need of revision and should be revised. Chairman Burt appointed the following committee to study and revise report forms: Dean Foss, Dean Hayman, and Dean Schaefer, Chairman.

11. With the consent of Deans Hayman and Smith, the Chairman referred the study on the revision of forms for application for membership to the **Subcommittee on Membership** consisting of the following members:

    Dean Crossen, Dean Foss, with Dean Smith as Chairman.

12. The resolution from the **Committee on Teachers' Conferences** "favoring joint sessions of Teachers' Conferences under the supervision of officers on Teachers' Conferences" was approved and the officers were encouraged to implement this recommendation for the next annual meeting.

    The resolution from the **Committee on Teachers' Conferences** "providing for exchange of information and techniques and establishment of organized Teachers' Conferences in each of the eight districts in cooperation with the Teachers' Conferences of the A.A.C.P." was on motion of McCloskey-Crossen listed for consid-

eration at the next district meetings with the request that the districts report back to the Executive Committee the wishes of their respective groups in regard to the recommendation. Carried.

Resolution (4) from **Committee on Teachers' Conferences** "favoring encouragement and permission for any graduate student to do a minimum amount of teaching irrespective of his sponsorship" was discussed at length and finally referred to the following individuals who are to report at the next meeting of the Executive Committee: Dean McCloskey, Dean Schaefer, and President Christensen, Chairman. On motion of Schaefer-McCloskey, the Secretary was instructed to inform the Secretary of the Foundation that a committee had been appointed to study the matter and to bring in a recommendation. Carried.

13. The Committee gave considerable time to the communications and resolutions from the **Committee on Audio-Visual Education.** The Executive Committee authorized the chairman of the **Committee on Audio-Visual Education** to make contact with the N.F.I. and to allow expenses of such travel from Atlantic City to New York City with the suggestion that this trip be made prior to the annual meeting. The sum of $50 additional was allowed for the expenditure of this committee making the total budget item $100.

Resolutions (1) BE IT RESOLVED That the editor of The Journal be instructed to provide space in each issue of The Journal, such space to be devoted to reviews of Audio-Visual teaching aids, including films, slides, charts and necessary equipment, and (2) BE IT RESOLVED That the Committee on Audio-Visual Education be charged with the responsibility of preparing reviews of currently available Audio-Visual materials for publication; from the report of the Committee on Audio-Visual Education were considered with action deferred.

Resolutions (3) The members of the Association be encouraged to submit reviews of new Audio-Visual teaching aids to the chairman of the Committee on Audio-Visual Education, and (4) BE IT RESOLVED That the Committee on Audio-Visual Education continue to foster the use of Audio-Visual teaching materials in pharmaceutical education; were approved.

14. The request of the **Committee on Achievement and Predictive Tests** for funds to employ an individual to aid the committee in the administration of these tests was, at the request of the committee chairman, held in abeyance.

15. Chairman Burt reported that in reply to his inquiry a statement had been received from Dr. Helen Dwight Reid, Chief, European Section, Division of International Educational Relations, Office of

Education, Federal Security Agency, concerning the granting of credit for work done in the fifth year of certain Canadian high schools ("upper schools"). It was also implied that similar information concerning advanced credit from other foreign institutions would be supplied upon request addressed to Dr. Reid. The committee instructed Chairman Burt to inform members of the specific details concerning the evaluation of credits from Canadian high schools and the availability of the evaluation service for credits from foreign institutions.

16. The Executive Committee carefully discussed reports of violation of the so-called "3-year rule" by three member colleges. In two instances, the apparent violation was satisfactorily explained by the executive officers as errors in reporting credits of transfer students.

In view of the circumstances surrounding the infraction by the third school, the warning issued prior to this meeting by Chairman Burt, which contains a statement to the effect that no deviation from the rule on residence requirements would be permitted, received the full and complete endorsement of the Executive Committee.

17. It was moved by Hayman-McCloskey that a letter be sent to all member colleges indicating that the Executive Committee will carefully scrutinize all future reports to be certain that all member colleges comply with all requirements for admission to or membership in the Association. (Article I of By-Laws, Sec. 1-12). Carried.

18. Section 6b of Article I of the By-Laws and summer sessions in Pharmacy were thoroughly discussed. On motion of McCloskey-Foss, the Chairman was instructed to appoint a committee to make a survey of conditions as they exist in regard to summer school work now being offered by member schools. Carried.

Chairman Burt appointed Deans Crossen and Hayman, with Dean McCloskey as Chairman.

19. Chairman Burt stated that a suit is pending for reclamation of the amount involved through loss of the shipment of Journals to the Milwaukee meeting.

Meeting adjourned at 10:10 P. M.

October 11, Hotel LaSalle

20. The meeting was called to order at 9:00 A. M. by Chairman Burt. Present: President B. V. Christensen, Editor R. A. Lyman, Deans George E. Crossen, Noel E. Foss, J. Lester Hayman, John F.

McCloskey, Hugo H. Schaefer, R. Blackwell Smith, Jr., and Secretary L. C. Zopf.

21. The question of Teachers' Seminars was reopened and the Executive Committee agreed that future Teachers' Seminar Committees should consist of five members composed as follows: Chairman of the Executive Committee, President, Secretary-Treasurer of the Association, and the other two members of the Seminar Committee to be selected from the staff of the school serving as host. Secretary Zopf read the report of the Seminar as submitted by Dr. Uhl, Chairman of the Seminar Committee. Christensen- Crossen moved that the papers presented at the Pharmacy Teachers' Seminar held at the University of Wisconsin this past summer be carefully edited and issued as a supplement to the January issue of **The American Journal of Pharmaceutical Education**, the total supplement not to exceed 120 pages. Carried.

22. Christensen-Smith moved that this Association contribute $100 to the Committee on the Status of Pharmacists in Government Service. Carried.

23. Editor Lyman reported that Dr. Dille and Dr. Youngken, Jr., are making rapid progress with the index for **The American Journal of Pharmaceutical Education** through the 13th volume.

24. Secretary Zopf was requested to obtain copies of the proposed model Constitution and By-Laws of the Teachers' Conferences and to submit such copies to the following committee for study: Dean Schaefer, Dean Foss, and Dean McCloskey, Chairman.

25. The Executive Committee considered the recommendations of the Subcommittees appointed to study the Recommendations from the Findings and Recommendations of the Pharmaceutical Survey.

Recommendation from Subcommittee Number 1:

"IT IS RECOMMENDED That there be set up, under the auspices of the American Pharmaceutical Association, an agency to be known as the 'Commission on Professional Manpower for Pharmacy.' This commission would be composed of one representative of each of the organizations holding membership in the National Drug Trade Conference and such other representatives as the commission may desire."

Action: President Christensen was requested to write to the American Pharmaceutical Association advising them that we were ready to name a representative to such a Commission.

Recommendation from Subcommittee Number 2.

"IT IS RECOMMENDED That the American Council on Pharmaceutical Education, in full cooperation with the American Associa-

tion of Colleges of Pharmacy, encourage certain of the accredited colleges and schools of pharmacy, properly staffed and equipped, and advantageously located, to serve as centers for the preparation of teachers of pharmacy."

Action: Secretary Zopf was requested to communicate with Secretary Costello of the American Council on Pharmaceutical Education indicating this Association's desire and intention to cooperate in the preparation of better teachers.

Recommendation from Subcommittee Number 2:

"IT IS RECOMMENDED That steps be taken by the American Association of Colleges of Pharmacy for the development and validation of specialized aptitude and achievement tests for students of pharmacy, such tests to be administered by the individual colleges at the time of admission, during the period of education and training, and prior to graduation. It is advised, in this connection, that the institutions provide for the cost and that the Association seek the counsel and cooperation of the recently formed Educational Testing Service."

Action: Advise the Chairman of the Committee on Achievement and Predictive Tests to study ways and means of implementing this recommendation.

Recommendation from Subcommittee Number 3:

"IT IS RECOMMENDED That the American Association of Colleges of Pharmacy create a standing committee, the duties of which should be (a) to develop uniform plans to be followed by the colleges or schools when making prescription studies; and, (b) to assemble and publish the results of the studies made by individual institutions. Such assembly of results should be made available to the medical schools of the country."

Action: This resolution was referred to the Committee on Professional Relations. It was also suggested that the Committee on Professional Relations might wish to have the topic discussed by each of the eight Districts.

Recommendation from Subcommittee Number 5:

"IT IS RECOMMENDED That financial provision be made whereby the American Association of Colleges of Pharmacy and the American Council on Pharmaceutical Education will be enabled to assume responsibility for the continued study of the program of pharmaceutical education and training in order that it may be kept abreast of educational and professional developments and social needs."

Action : Referred to the Committee on Curriculum.

Recommendation from Subcommittee Number 5:

"IT IS RECOMMENDED That those agencies of the profession of pharmacy concerned with the maintenance of professional

education and training on a high level include in their program of service, provision for the modernization of pharmaceutical textbooks as essential instrumentalities for effective and economical teaching."

Action: The Executive Committee gave this very careful consideration and suggested that Dr. Elliott be requested to list the objections generally made with reference to the present pharmacy textbooks.

26. On motion by Christensen-Hayman, the Secretary was instructed to contact Dr. Webster to learn if he would be available to appear before a limited number of state Association meetings for the purpose of discussing the proposals of the Curriculum Committee. The expenses incurred by Dr. Webster through such participation in state meetings should be absorbed by the individual state Associations.

27. It was the opinion of the Executive Committee that the Association should express more interest in the District meetings. They looked with favor on the possibility of having an officer attend each of the District meetings.

President Christensen was in receipt of an invitation from District 7 to appear on the program, at Corvallis, Oregon, February 24, and 25. The Executive Committee approved the necessary travel expenses.

28. Christensen-Crossen moved that $500 from our reserve fund be made available for an interim meeting of each of the following committees: Committee F on World Congress for Pharmaceutical Education and Committee J, on Office of Permanent Secretary of A.A.C.P.

Adjourned 1:15 P. M.

Louis C. Zopf, Secretary

An Introduction to Animal Biology, by John B. Parker, Ph. D., Professor Emeritus of Biology, the Catholic University of America, and John J. Clarke, Ph. D., Assistant Professor of Biology (R) in the same university. 1949. Third Edition. 554 pages, illustrated. The C. V. Mosby Company. Price $4.00.

The plan of former editions has been maintained. The newer knowledge concerning vitamins and hormones has been included, as well as a discussion of the Rh factor in relation to blood groups in making transfusions. The illustrations are clear and appropriately placed in the textual material.

How Can the Supply of Pharmacists Be Controlled*

LLOYD E. BLAUCH
Associate Chief for Education in the Health Professions, Office of Education, Federal Security Agency, Washington, D. C.

One thing which has been disturbing the minds of a number of leaders in the pharmaceutical profession and in the field of pharmaceutical education is, what are we going to do with these thousands of young men and women who are going to graduate in pharmacy, beginning about 1950? It seems to me the problem of manpower is being pretty well solved now; we are going to have (at least, so I am told) many more pharmacists than can find places in the field of pharmacy.

So it does not seem to me we need to give too much attention to making sure that we will have an adequate supply, because, if the figures are reasonably accurate, the facts seem to be that we are going to have many more pharmacists than we shall need. Now is the logical time, therefore, to raise the standards of education and develop a better type of person.

Mr. Moderator, I have prepared a statement which I should like to read, with your indulgence.

One thing weighs heavily on my mind. I refer to the paper read last night at the banquet by the president of one of our state universities. I was distressed indeed that such a paper should be read by one in a high educational position. May I refer to several points in particular.

First, the address suggested strongly that the program of pharmaceutical education should be kept within a 4-year framework. It did this without indicating the slightest evidence as to whether the objectives of a sound pharmaceutical education can be accomplished within four years.

Apparently the suggestion was based on two points: (1) The cost may be too great, and (2) we have not yet made the most of the 4-year curriculum.

*Comments on President Miller's address, at the annual joint dinner at the Jacksonville meeting.

The cost factor will be settled by the American people. Certainly, so far as we have any evidence concerning this matter, I am sure the American people will pay the bill if they see the need. Our educational history is clear on this point.

The second point, that we have not yet exploited the 4-year program to the full, is an old cliche which I have often heard, but have never seen clearly demonstrated. Instead of this being a sound argument or basis of action, it is an excuse to retard progress.

Let us look at this particular idea. The principal shortcomings of the present pharmaceutical curriculum are three: (1) Lack of general education; (2) insufficient attention to the business or administration aspects of pharmacy; and (3) inadequate instruction in the biological sciences as represented by physiology, biochemistry, and pharmacology. It must be conceded, of course, that in some respects some colleges of pharmacy do better than others.

I have heard it said that there is deadwood in the curriculum, but I have not noted any agreement as to where it is . Moreover, those who make the assertion are among the first to insist that general education, pharmacy administration and the biological sciences must have more time.

Gentlemen, I have tried to study this problem from every possible point of view, and I have become fully convinced that the job of preparing a professional pharmacist cannot be done in four years of education beyond high school. Your curriculum committee has likewise looked into this matter very carefully and at length, and it has likewise come to the firm conclusion that four years is not a sufficient amount of time for an adequate program of pharmaceutical education and training.

I have one other criticism of President Miller's paper. He made a plea for a well-rounded education, with ample attention to the humanities and the social studies. And all of this is to be added to adequate scientific and professional training, and to be kept within four years.

Have you heard of the man who wanted to eat his cake and also to have it? Why urge two things, when doing one of them absolutely precludes the other?

He reminded me of a fact which I had known, but it had not come so forcefully to me, that the same arguments which are now made

in opposition to lengthening the program are exactly the same as were made when the question was up as to whether we should move from one to two years, from two to three, from three to four. Read the literature; it is all there.

I trust you will pardon me for appearing to make a rather sharp criticism of President Miller's paper, but I could not let his statement pass without challenge. To me, his argument is not realistic, and it certainly does not accord with the facts which The Pharmaceutical Survey has had available.

All I ask here is that we be sensible men and women, that we look the facts in the face and go where a reasonable interpretation of them leads us.

Report of the 1949 Pharmacy Teachers Seminar Held at the University of Wisconsin June 27 to July 8, 1949*

Dr. Edward C. Elliott, Director of The Pharmaceutical Survey, recommended that a seminar for teachers in our schools and colleges of pharmacy should be held in the principle teaching branches of the profession. He suggested further that the proper organization to carry out the project would be the American Association of Colleges of Pharmacy.

The Association accepted this responsibility by appointing a committee of the Executive Committee to study the problem and to determine whether or not seminars could be arranged. President Hayman appointed the following committee: Dr. J. B. Burt, Prof. L. C. Zopf and Dr. A. H. Uhl, chairman. The work of the committee was carried on for the most part by mail. One meeting was held at the LaSalle Hotel in Chicago the afternoon previous to the Executive Committee meeting on December 10, 1948, to approve a tentative program intended to be submitted to the Executive Committee of the Association. On

* In order to conserve space the list of institutions represented at the Seminar and much of the discussion and comments which were presented as a part of this report have been deleted. Editor.

December 10, this program was approved and the committee was authorized to present the project to the Board of Directors of the American Foundation for Pharmaceutical Education. It was understood that the Foundation would consider supporting the seminar financially if and when a formal request was presented. In April, Dr. Burt made a formal request and the Foundation approved a budget of $6,000.

The Committee on Seminars proceeded to go ahead with the tentative program, and final arrangements were made for the seminar and were presented at the Jacksonville meeting of the AACP on April 24 to 26, 1949.

TIME AND PLACE OF MEETING

It was voted to have the first seminar deal with practical pharmacy and those courses pertaining to that area of the curriculum. The University of Wisconsin was selected as the place of meeting and the time was set from June 27 to July 9, inclusive; however, the program was concentrated so that the meeting ended on Thursday, July 7. This change was voted by all present. The University extended the facilities of the campus and cooperated in every way that it could to help make the meeting a success.

Program

Monday, June 27

9:00 — Registration

9:30 — First Session ..... Presiding — Dr. Burt

A. Message from Chairman of Conference ..... Dr. Uhl

B. Some Fundamental Psychological Principles of Learning ..... Dr. Pella

C. Methods of Presentation: lectures, laboratory, etc. ..... Dr. Pella

Discussion

2:00 — Second Session ..... Presiding — Dr. Uhl

A. Some Suggestions in Teaching Fundamental Mathematical Concepts ..... Dr. Mayor

Discussion

B. Techniques and Educational Principles to be Considered in Utilizing the Several Methods ..... Dr. Pella

Discussion

Tuesday, June 28

9:00 — Third Session ..... Presiding — Dr. Zopf

A. Educational Aids: Visual instructional materials, etc. ..... Dr. Wittich

Discussion

B. Tests and Testing: Construction, types, techniques and utilization.....Dr. Harris
Discussion

2:00 — Fourth Session.....Presiding — Dr. Uhl
A. General Discussion

Wednesday, June 29

9:00 — Fifth Session.....Presiding — Dr. Ohmart
Topic: Pharmaceutical Calculations, Techniques, Nomenclature
A. Pharmaceutical Calculations.....Dr. Netz
Discussion
B. Technique.....Dr. Butt
Discussion
C. Nomenclature.....Dr. Lee
Discussion

2:00 — Sixth Session.....Presiding — Dr. Lee
Topic: Physical Pharmacy
A. Solutions — application of the physical principles to the preparation of pharmaceuticals.....Dr. Goyan
Discussion
B. Colloids, Suspensions and Emulsions—application of the physical principles to the preparation of pharmaceuticals.....Dr. Higuchi
Discussion
C. Powders — physical principle involved in powder technology.....Dr. Busse
Discussion

Thursday, June 30

9:00 — Seventh Session.....Presiding — Dr. Wilson
Topic: Advanced Pharmaceutical Technology
A. Flavoring, Coloring, Masking Agents. Techniques and Preparations.....Dr. Wilson
Discussion
B. Preparations for Local and Systemic Use.....Dr. White
Discussion
C. Special Techniques and Agents in the Manufacture of Dosage Forms.....Dr. DeKay
Discussion

2:00 — Eighth Session.....Presiding — Dr. Busse
Topic: General Discussion

Friday, July 1

9:00 — Ninth Session ..... Presiding — Dr. Netz
Topic: Beginning Dispensing
A. Powders, Dispensing of ..... Dr. Brody
Discussion
B. Solutions, Dispensing of ..... Dr. Goldner
Discussion
C. Dosage Forms, Dispensing of ..... Dr. Ohmart
Discussion
2:00 — Tenth Session ..... Presiding — Dr. DeKay
A. Incompatabilities ..... Dr. Wurster
Discussion
F. New and Non-Officials (Proprietaries) ..... Dr. Sprowls
Discussion
6:00 — Banquet

Saturday, July 2

9:00 — Eleventh Session ..... Presiding — Dr. Sprowls
Topic: Dispensing of Student Health Prescriptions
as an Aid to Teaching ..... Dr. DeKay
2:00 — Twelfth Session ..... Presiding — Dr. Lee
Topic: General Discussion

Tuesday, July 5

9:00 — Thirteenth Session ..... Presiding — Dr. Goyan
Topic: Pharmaceutical Manufacturing ..... Dr. Klemme
2:00 — Fourteenth Session ..... Presiding — Dr. Wurster
Topic: Pharmaceutical Standardization and Control
Discussion ..... Dr. DeKay
B. Laboratory Control ..... Dr. Klemme
Discussion

Wednesday, July 6

9:00 — Fifteenth Session ..... Presiding — Dr. Klemme
Topic: Hospital Pharmacy
A. Dispensing in the Hospital Pharmacy ..... Dr. Zopf
Discussion
B. Manufacturing for Hospital Pharmacy ..... Dr. Benton
Discussion
2:00 — Sixteenth Session ..... Presiding — Dr. Higuchi
Topic: General Discussion

Thursday, July 7

9:00 — Seventeenth Session ..... Presiding — Dr. Lee
Topic: History of Pharmacy

A. Teaching Program: Construction, content, and presentation of a general survey course ..... Dr. Urdang
Discussion

B. Teaching Aids: Visual Material, projection of illustration for one area of history with commentary and indication of sources for additional material; mimeographed biblographies — (a) highly selective list of books and journals, annotated, including source and price, for use by teachers; (b) suggested supplemental reading lists for students in various fields of interest ..... Mr. Sonnedecker
Discussion

C. Teaching Program: Construction, content and technique of presenting (a) specialized courses, such as on important men in pharmacy (socio-biographical) and the history of pharmacopoeias; (b) graduate courses for (1) background information, such as on the development of education and pharmaceutical industry, and (2) degree work leading to M. S. or minor major for Ph. D. in History of Pharmacy; curriculum at Wisconsin and need for men with such training at colleges to provide broader cultural base.
Discussion

2:00 — Eighteenth Session ..... Presiding — Dr. Busse

TOPIC: How can History of Pharmacy be Taught as a Cultural Subject

A. Reading Assignments in Teaching History of Pharmacy ..... Dr. Lee
Discussion

B. The Pharmacist—his sociologic contributions and responsibilities, both discussions to center the **How** as well as the **What**, with regard to giving history of pharmacy a broad cultural scope. ..... Dr. Urdang

Friday, July 8

9:00 — Nineteenth Session.....Presiding—Dr. Burt
TOPIC: General Summation of Sections
2:00 — Twentieth Session.....Presiding—Dr. Uhl
TOPIC: General Summation of Conference

The program has been given wide publicity and I believe every teacher in our Schools and Colleges has at some time or another looked it over. Those of you who were in attendance are well acquainted with it. At the beginning your committee was somewhat at a loss to know just how to approach the question, i.e., "how to teach teachers in our schools of Pharmacy to become better teachers." I can assure you considerable thought was given to the problem of who should be the teachers. It was finally decided that a rather large group be used rather than a smaller number. It seemed that it would be more desirable to have someone, well qualified, discuss a specific portion of our course work, than to attempt to have a few try to cover the entire field. On this basis those who were asked to serve were men whom the committee believed could do a good job and that others there is no implication would not do as well.

Twenty-three individuals took part in presenting specific parts of the program. Nineteen of these were from Schools and Colleges of Pharmacy and four were from the School of Education of the University of Wisconsin. Dr. M. O. Pella of the School of Education acted as co-chairman and was active during all sessions of the seminar. A list of those who took part is as follows:

Personnel

Lloyd E. Blauch	Am. Council on Education	Washington, D. C.
Edward C. Elliott	Am. Council on Education	Washington, D. C.
M. O. Pella	Co-Chairman, University of Wisconsin	Madison, Wis.
A. H. Uhl	Chairman	Madison, Wis.
George Webster	U. of Illinois	Chicago, Ill.
B. E. Benton	U. of Illinois	Chicago, Ill.
D. C. Brodie	U. of California	San Francisco, Cal.
J. B. Burt	U. of Nebraska	Lincoln, Neb.
L. W. Busse	U. of Wisconsin	Madison, Wis.
George DeKay	Purdue University	Lafayette, Ind.
Karl J. Goldner	U. of Tennessee	Memphis, Tenn.
F. M. Goyan	U. of California	San Francisco, Cal.
T. L. Harris	U. of Wisconsin	Madison, Wis.
T. Higuchi	U. of Wisconsin	Madison, Wis.
C. J. Klemme	St. Louis College	St. Louis, Mo.

C. O. Lee	Purdue University	Lafayette, Ind.
C. V. Netz	U. of Minnesota	Minneapolis, Minn.
L. M. Ohmart	Massachusetts College	Boston, Mass.
G. E. Sonnedecker	U. of Wisconsin	Madison, Wis.
J. B. Sprowls	Temple University	Philadelphia, Pa.
George Urdang	U. of Wisconsin	Madison, Wis.
Allen I. White	State College of Washington	Pullman, Wash.
Stephen Wilson	U. of Pittsburgh	Pittsburgh, Pa.
W. A. Wittich	U. of Wisconsin	Madison, Wis.
D. E. Wurster	U. of Wisconsin	Madison, Wis.
L. C. Zopf	U. of Iowa	Iowa City, Iowa
John R. Mayor	U. of Wisconsin	Madison, Wis.

Dr. Lloyd E. Blauch of the Federal Security Agency, Office of Education, and Dr. George Webster, representing the curriculum committee of the AACP, were present and took an active part in certain portions of the program.

From the above program it is obvious that the entire emphasis was placed on "how" rather than "what" to teach. It was apparent to the committee that help was needed from the point of view of general education. The men who served and presented material, i.e., Drs. Harris, Mayor, Pella and Wittich did a splendid job in discussing with us certain phases of educational methods, techniques, etc.

The program was divided into five parts. The first two days were devoted to general education as applied to the teaching of professional courses. This was followed by a consideration of general pharmacy, dispensing pharmacy, manufacturing and hospital pharmacy and history of pharmacy. These individual general sessions were followed by discussion periods in which the entire group took an active part. The men from the School of Education (Pella, Harris, Wittich, and Mayor) were encouraged to be especially active in this portion of the work.

More than fifteen typewritten pages of the discussion were recorded by dictaphone. For most of the recording we must thank Dr. Jack E. Orr of the University of Utah. These notes will be incorporated into the general summary of the meeting.

Attendance

Thirty-nine different schools were represented including three Canadian schools and the University of the Philippines. Ninety-six different individuals registered for the seminar and took an active part in the program. A large number of those present were younger members of the several college staffs. This was most encouraging to the committee and we feel it speaks well for the Deans of the colleges

represented. Meetings were scheduled from 9:00 to 12:00 in the morning and from 2:00 to 4:30 in the afternoon. All sessions were well attended and every member present took an active part in the program. Differences of opinions were frequently expressed; however, we feel this was one of the major factors which lead to the success of the seminar.

Resolutions

Because of the benefits received by those attending the Seminar the following resolutions were adopted:

1. That this Seminar express its appreciation of the fine work of the committee who planned and guided the program and the University of Wisconsin for the courtesies and hospitality so generously extended.
2. That this Seminar recommend to the Executive Committee of the A.A.C.P. the continuance of the Pharmacy Teachers' Seminar and the extension of such a program to other areas of the pharmacy teaching program.
3. That those in attendance at this Seminar express their thanks and appreciation to the American Foundation for Pharmaceutical Education for the financial support necessary to make such a program possible.

Budget

Furnished by Secretary and Treasurer of A.A.C.P.

Curriculum Study

The basic program gave very little consideration to a study of the pharmacy curriculum. Naturally it was brought into the discussion at different points; however, because of the presence of Dr. George Webster and Dr. Lloyd E. Blauch several discussion periods were held where the curriculum pertaining to pharmacy courses were considered.

ARTHUR H. UHL, Chairman

Findings and Recommendations of the A. Ph. A. Mission to Japan

It will be recalled that this mission was organized by the American Pharmaceutical Association at the request of General Douglas MacArthur, Supreme Commander for the Allied Powers, to visit Japan

and contact hospitals, clinics, educational institutions, pharmacies, and pharmaceutical manufacturers and distributors for the purpose of studying the educational system in pharmacy and the organization of pharmacists as well as the manufacture, control and distribution of drugs and pharmaceutical products in Japan.

The mission spent the month of July 1949 in Japan meeting both SCAP and Japanese officials and organizations and inspecting the various institutions devoted to teaching pharmacy and to the production and distribution of drugs.

The personnel of the commission was made up of the following individuals: Deans Glenn L. Jenkins, Hugh C. Muldoon, Troy C. Daniels, and Don Francke and F. Royce Franzoni. The findings and recommendations as summarized by Brig. Gen. Crawford F. Sams, who serves as chief of the Health and Welfare Section Headquarters under General Douglas MacArthur, are as follows:

1. Establishment of a minimum four-year college requirement for pharmacists instead of the previous three-year course was commended. However, it was recommended that more emphasis be placed on practical pharmacy instead of pharmaceutical chemistry and that training in pharmacy administration and pharmaceutical ethics be more adequate.

2. Good progress in the reorganization of the pharmaceutical profession and its national association was observed. Harmony was found to exist between medical, dental and pharmaceutical leaders.

3. The Pharmaceutical Affairs Law 197, July 29, 1948, was found in general to be an excellent basic document. Some minor changes were recommended.

4. Pharmaceutical manufacturing was found to be progressing excellently. Many items are equal to or in excess of Japanese demands. However, physical plants were at a dangerous level of deterioration.

5. More long term research along fundamental lines could be done if the economy permitted.

6. Retail drug stocks were good almost everywhere. Very few prescriptions are filled at pharmacies, showing lack of support by the medical professions.

7. Organization and functioning of hospital pharmacies was good in general. There was lack of standardization of medicines, making rational treatment more difficult and medicines more expensive.

8. Medicine and pharmacy should be separated by legal and educational means, to the end that physicians diagnose and prescribe and

the pharmacists secure, store, compound and dispense pharmaceutical products on the physician's prescription.

9. Prescriptions be required for powerful and poisonous drugs.

10. A small model plant be built to demonstrate proper manufacturing techniques.

11. All persons compounding and dispensing drugs meet the same requirements as to educational licensure and equipment, and only qualified pharmacists be appointed to key positions.

12. Greater exchange of teachers between colleges in Japan and between Japan and other countries.

13. A nation-wide survey be made to determine manpower and educational needs to determine proper distribution of both schools and graduates.

14. Study be given to a sound plan of financing colleges to lessen their dependence on tuition fees.

General Sams said, "The report to the SCAP indicates an appreciation of the problems facing the Occupation Forces in the field of pharmaceutical affairs and the accomplishments already made. The Mission complimented the progress made by the Ministry of Welfare in pharmaceutical education and the manufacture and distribution of drugs, biologics, instruments and other materials under the guidance of SCAP advisers, — difficult economic conditions and far-reaching social changes notwithstanding."

New Books

Inorganic Chemistry in Pharmacy, by Lloyd M. Parks, Ph. D., Professor of Pharmaceutical Chemistry, University of Wisconsin; Paul J. Jannke, Ph. D., Associate Professor of Pharmaceutical Chemistry, University of Connecticut; Loyd E. Harris, Ph. D., Professor of Pharmacy, Ohio State University; with a chapter on **Isotopes** by John E. Christian, Ph. D., co-ordinator of Bio-Nucleonic Research, School of Pharmacy, Purdue University. 1949. 298 pages. J. B. Lippincott Company, Philadelphia. Price $6.00.

In this textbook, the authors have erected a monument to completeness by preparing a study designed for the broad curriculum of

the future. The pure chemistry of medicinal inorganic substances is enriched with correlative information, historical background, natural occurrence, methods of preparation, properties and uses—to the end that a student may well be inspired with the pertinence of chemistry in the detailed construction of pharmaceutical science. Beginning with an interesting introduction in which associations are developed between chemistry and other subjects in the curriculum, the material moves on to a discussion of the periodic table and then to the components of the 8 groups of elements and their compounds as they are important to pharmacy.

The classification used regards the majority of the compounds discussed as substitution products of the hydrides and hydroxides of the elements. The final chapter, dealing with the recent discoveries and uses of the isotopes of elements, stamps the text as fresh, vigorous and well qualified for the dedicated task.

Fundamental Principles and Processes of Pharmacy, by Henry M. Burlage, Joseph B. Burt, Charles O. Lee, and L. Wait Rising. 1949. Second Edition. 651 pages, 201 illustrations. McGraw-Hill Book Company, Inc. Price $5.00.

This text by these well known authors has been revised in line with the U. S. P. XIII and N. F. VIII. Several chapters have been enlarged and the newer concepts of certain principles and technics have been added. A list of visual aids which was formerly included in the companionship laboratory manual has been enlarged and transferred to the text.

Goethe and Pharmacy, by George Urdang. 1949. The American Institute of the History of Pharmacy, University of Wisconsin at Madison. Price $2.50.

As a contribution to the 200th anniversary of the great poet's birth, the author has marshaled in booklet form convincing and well documented evidence to show that there was not only an essential relationship between pharmacy and the great poet, but that the pharmaceutical profession furnished him with men, achievements, and information of importance in his life work. In the author's own words: "The basic plan has been to present facts rather than interpretation. Just for this reason, it may help toward a better understanding of the genius and his time. As far as pharmacist readers are concerned, I hope they may find not only interesting information but inspiration and encouragement for their own work and for further development of the modern profession. Finally I believe that the facts presented may serve to support my belief that one of the criteria of real greatness is continuous contact with and interest in the people, not aloofness."

The booklet is beautifully done in every respect, in keeping with the tradition of the author.

Pharmaceutical Compounding and Dispensing.—Rufus A. Lyman, Dean College of Pharmacy, University of Arizona, Editor-in-Chief; George Urdang, D. Sc. Nat., Professor of History of Pharmacy, University of Wisconsin and Director American Institute of the History of Pharmacy, Technical Editor, with the assistance of Six Advisory Editors and Eleven Authors. 1949. 321 pages, illustrated. J. B. Lippincott Company. Price $6.50.

A completely new book with a new approach from the viewpoint of an applied science rather than that of an art which has been taught from the viewpoint of primarily stressing technics. Incompatabilities are treated in the text as natural and predictable consequences of known physiochemical laws. In general physiochemical concepts are used to build mental images of fundamental, and hence lasting, significance. The authors of this volume believe that the analytical and deductive attitude encouraged by this approach is of greater benefit to the practice of pharmacy than the short-term memorizing of series of more or less unrelated facts. Therefore, the treatment of specific cases has been de-emphasized in favor of generalization with additional information available in table form to permit ready application to the situation in hand. It must be kept in mind that, while the prescriptions of tomorrow will probably not contain many of the items of our present materia medica; the future medical compounds, nevertheless, will still obey chemical and physical laws. This volume is not only a new book, it is a new venture. Its authors and editors hope that it will help pharmacy keep its place in a period of change.

Manual for Athletes, by Edward F. Voltmer, Ph. D., Head Department of Health and Physical Education, Drake University, and Carl D. Voltmer, Ph. D., Professor of Physical Education, College of the Pacific, Stockton, California. 1949. 215 pages, illustrated. The C. V. Mosby Company. Price $3.00.

A manual covering the field of sports for men, which gives material intended to build a sound athletic program to improve physical fitness. A helpful book for athletic or college students interested in better health.

The Intramural Handbook, by Carl D. Voltmer, Ph. D., College of the Pacific, and Vernon W. Lapp, Ph. D., Associate Professor of Physical Education, University of Nebraska. 1949. 176 pages, illustrated. The C. V. Mosby Company. Price $3.00.

The book discusses the philosophy and purpose, the organization and competition and seasonal activities for intramural sports. This text and the companion book, **Manual for Athletes** are of special value to those colleges of pharmacy which conduct their own athletic programs.

Periodontia, by Henry M. Goldman, D. M. D., chief of Stomatology and Head of the Dental Department, Beth Israel Hospital; Peridontist, Massachusetts General Hospital, Boston; Consultant, Army Institute of Pathology, Washington, D. C. 1949. Second Edition. 611 pages, 488 illustrations including 18 in color. The C. V. Mosby Company. Price $12.50.

Peridontia is the study of the supporting structure of the teeth. It includes not only the physiology and pathology of these structures, but the diagnosis, the etiology and the treatment as well. The reading of this text is as easy and as fascinating as the reading of a novel, and much more helpful to the pharmacist in the intelligent conduct of his profession and his store in which he carries so many things that are aimed at maintaining oral health. We as pharmacists need to familiarize ourselves with the literature of the related professions.

The Practice of Refractions, by Sir Stewart Duke-Elder, Ph. D., M. D., Surgeon-Oculist to the King; Director of Research, Institute of Ophthalmology, University of London. 1949. Fifth Edition. 317 pages, 216 illustrations. The C. V. Mosby Company. Price $6.25.

Certainly a most valuable text to the student of refraction and of value even to the layman who is concerned about the meaning of his own symptoms which may indicate refractive errors, large or small.

Public Health and Hygiene, by Charles F. Bulduan, M. D., formerly Director of Health Education, Department of Health, City of New York; Surgeon (R) United States Public Health Service; and Nils W. Bolduan, M. D., School Physician and Chief Pediatric Service, St. Francis Hospital, Santa Barbara, California. 1949. Fourth Edition. 423 pages, illustrated. W. B. Saunders Company.

The text has been thoroughly revised and much new material added, especially in the field of antibiotics and synthetic insecticides and herbicides. It is a reliable guide to the changes in public health organization and practice which has changed so rapidly in recent years.

Laboratory Manual for Principles and Processes of Pharmacy, by Henry M. Burlage, Joseph B. Burt, and L. Wait Rision. 1949. Second Edition. 271 pages, illustrated. McGraw-Hill Book Company, Inc. Price $3.00.

This excellent manual has been revised in conformity with the latest editions of the U. S. P. and the N. F.

Collectanea Pharmaceutica Suecica, Edidit Kungl Farmaceutiska Institutets Bibliotek, Stockholm. 1949. Volume 111.

A collectioon of papers made by the Institute and bound in book form covering the work of Swedish scientists for the year 1948. Some of the researches are published in English, but most of them are in Swedish. In both instances, however, an excellent summary of each paper is published in English. An excellent and worthy publication.

Self-teaching Tests in Arithmetic for Nurses, by Ruth W. Jessee, R. N., M. A., Director of Nursing Education, Presbyterian Hospital, Philadelphia. 1949. Third Edition. 122 pages. The C. V. Mosby Company. Price $2.00.

The bane of the pharmacy, medical, and apparently of the nursing student's life is plain eighth grade arithmetic, and no amount of "college mathematics" will enable him to overcome that handicap. He must first master eighth grade, and this is largely an individual problem which must be done in conference with himself. The author has evidently written this manual with that in mind, and is to be commended for the effort. Since the student in any field has the idea that the student in a related field is on a lower plane than he is himself, this helpful text would make a wider appeal if the words "for Students of the Health Sciences" were substituted for the words "for Nurses".

Fundamentals of Pharmacy, by Walter H. Blome, M. A., Professor Emeritus of Pharmacy, Wayne University, and Charles H. Stocking, M. S., Dean, College of Pharmacy, University of Michigan. 1949. Second Edition. 312 pages. 158 illustrations. Lea & Febiger. $5.00.

The intention of the authors is to cover the basic and fundamental principles and practice of pharmacy, and keep the text down to a reasonable size, and to make it understandable to the student who has recently completed the standard high school course. Special contributions have been made by Dr. Elmon L. Cataline of the University of Michigan; Robert L. Jones, M. S., of the Abbott Laboratories, and Edward C. Watts, B. S., Pharm., Chief Pharmacist St. Luke's Hospital, New York.

A Textbook of Pharmacognosy, by George Edward Trease, Head of the Department of Pharmacognosy, University of Nottingham. 1949. Fifth Edition. 811 pages, 276 illustrations and 10 maps. The Williams & Wilkins Company. Price $8.00.

Another well known text that has proven its worth through five editions. The Fifth Edition has been revised in accordance with the U. S. P. XIII, 1947, and the B. P., 1948. French, German, and Spanish names of the more important drugs are given. More space has been given to important drugs and less to those that are becoming less used. The illustrations and the mechanics of former editions are maintained.

Bentley's Textbook of Pharmaceutics. Revised by Harold Davis, Ph. D., Pereira Medallist, Sometime Chief Pharmacist, University College Hospital, London, with the collaboration of M. W. Partridge, Ph. D., Lecturer in Chemistry, University of Nottingham and A. I. Robinson, Ph. C., Late Pharmacist in Charge, Manufacturing Laboratory, Messrs. Stafford Allen & Sons, Ltd., London, with contributions from several other qualified workers. 1949. Fifth Edition. 1,100 pages, 305 illustrations. The Williams & Wilkins Company. Price $7.50.

The fact that the text has run through five editions and many printings means it has established itself in British schools. The book follows a tralitional pattern which we have been trying to get away from in the United States, namely, the covering of several fields of pharmacy under one cover. The text is naturally based on the British Pharmacopoeia and British Pharmaceutical Codex. It is well written and should find a place in every pharmaceutical library.

Blakiston's New Gould Medical Dictionary, by Harold Wellington Jones, M. D.; Normand L. Hoerr, M. D., and Arthur Osal, Ph. D., with the cooperation of an editorial board and 80 contributors. 1949. First Edition. 1,294 pages, 252 illustrations on 45 plates, 129 in color. The Blakiston Company. Price $13.50, $10.75, or $8.50.

A completely new book and reference work based upon Gould's Medical Dictionary which decades ago became an aristocrat among books of its kind. Its authorship, made up as it is by specialists in the various medical and related fields, and the reputation of the publishers for making good books leaves nothing more to be said.

A Manual of the Penicillia, by Kenneth B. Roper, Principal Microbiologist, Fermentation Division, Northern Regional Research Laboratory, Bureau of Agricultural and Industrial Chemistry, U. S. Department of Agriculture, Peoria, Illinois, and Charles Thom, Collaborator, U. S. Department of Agriculture, Formerly Principal Mycologist, Bureau of Plant Industry, U. S. Department of Agriculture, Peoria, Illinois. 1949. 875 pages, 172 illustrations. The Williams & Wilkins Company, Baltimore. Price $12.00.

This manual has been designed as a means of identifying Penicillia in the laboratory with a minimum of misunderstanding in the interpre-

tion of species. It serves also as a guide to the accumulated literature concerning these molds. Some 4,000 strains were examined in the preparation of this volume. Groups of strains having consistent morphology and showing related biochemical activities have been arranged in series. Within each series, recognized species are arranged in logical sequence and described in such a way as to lead to a definite identification of material within the scope of the usual range of variants.

The volume is well illustrated and enhanced by the addition of ten plates in full color.

Nebraska
Creighton University, College of Pharmacy, Omaha
William A. Jarrett, Dean
University of Nebraska, College of Pharmacy, Lincoln
Joseph B. Burt, Dean

New Jersey
Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy, Newark
Thomas D. Rowe, Dean

New York
University of Buffalo, School of Pharmacy, Buffalo
A. B. Lemon, Dean
Columbia University, College of Pharmacy of the City of New York
Charles W. Ballard, Dean
Fordham University, College of Pharmacy, New York
James H. Kidder, Dean
Long Island University, Brooklyn College of Pharmacy, Brooklyn
Hugo H. Schaefer, Dean
Union University, Albany College of Pharmacy, Albany
Francis J. O'Brien, Dean

North Carolina
University of North Carolina, School of Pharmacy, Chapel Hill
Marion L. Jacobs, Dean

North Dakota
North Dakota Agricultural College, School of Pharmacy, Fargo
William F. Sudro, Dean

Ohio
Ohio Northern University, College of Pharmacy, Ada
Rudolph H. Raabe, Dean
University of Cincinnati, Cincinnati College of Pharmacy
Joseph Kowaleski, Dean
The Ohio State University, College of Pharmacy, Columbus
Bernard V. Christensen, Dean
University of Toledo, College of Pharmacy, Toledo
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